A.4.1

MEMORANDUM

To: Permit File

From: Todd D. Ramaly/Felix Lyczko

Date: February 3, 2000

RE: Documentation of activities under Superfund

Instead of pursuing Corrective Action and Closure/Post Closure at this site, it was referred to the Superfund program. This memo and the attached documentation confirms that the Superfund program accepted the site and took action to address the RCRA units and other potential hazards, obviating the need for further work under RCRA for this facility at this time.

Facility: Northside Sanitary Landfill Inc., Zionsville, Indiana
EPA ID: IND050530872

Units: Sequence #1 D80 Landfill
Sequence #6 T02 Impoundment

Documentation: Fact sheet describes activities addressing the landfill with a RCRA cap, leachate collection, and groundwater monitoring and treatment. In addition, maps associated with the Fact Sheet clearly indicate that all surface impoundments shown on the map had been removed.

EPA United States Environmental Protection Agency **Region 5**

NPL Fact Sheet

NORTHSIDE SANITARY LANDFILL, INC.

EPA REGION 5
Boone County
Zionsville, Union Township,
about 10 miles northwest of Indianapolis
6th Congressional District

INDIANA
EPA ID# IND050530872

accepted 7/97.

Last Update: August 1999

Site Description

The Northside Sanitary Landfill (NSL) covers approximately 65 acres of a 180-acre parcel of land. Over 16 million gallons of hazardous wastes have been deposited in the landfill. The NSL began operating in the 1950s as an open dump and was licensed by the state in 1971 to accept hazardous wastes. From 1972 to 1973, numerous operating deficiencies including the failure to cover refuse, surface burning, underground fires, leachate and vermin problems resulted in orders from the Indiana State Board of Health (ISBH) to cease operations. In 1982, the owner at the direction of the ISBH, installed a leachate collection system and three submerged leachate collection tanks on the western side of the site. After the owner removed 400,000 gallons of leachate from the three tanks and disposed of it by spraying it on the landfill, the Indiana Division of Land Pollution Control advised the owner that leachate would have to be solidified prior to disposal. By early 1983, the state Environmental Management Board issued a notice of violation and ordered the owner to stop accepting hazardous waste. Approximately 50 residences are located within one mile of the site and 1,750 residences located within three miles of the site use wells for drinking water. The nearest town is Zionsville, Indiana which is about six miles south of NSL. An unnamed ditch runs along the east side of the site into Finley Creek. Finley Creek flows into Eagle Creek which runs for 10 miles before it empties into Eagle Creek Reservoir, which supplies approximately six percent of the drinking water for the city of Indianapolis.

Site Responsibility: This site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL Listing History: Proposed Date: 09/08/83
Final Date: 09/21/84

Threats and Contaminants

Groundwater, soils, surface water, and sediments have been contaminated with pesticides, acids, oils, metals, and volatile organic compounds (VOCs) including benzene and trichloroethylene (TCE). Potential health risks exist from accidental ingestion of contaminated soils and sediments. Contaminated landfill leachate and runoff into surface water may also pose helath risks to humans or wildlife in and around the water.

Cleanup Progress

The Remedial Action (RA) components for NSL listed in the 1987 Record of Decision (ROD), 1991 ROD amendment, and 1991 Consent Decree include: a Resource Conservation and Recovery Act (RCRA) hazardous waste cap with gas venting; a hydraulic isolation wall on the south and west sides of the landfill; a combined leachate/on-site groundwater collection system; a transfer station for collection and storage of leachate/on-site ground water to be trucked for disposal to an off-site treatment plant; a site fence; and a ground water and leachate monitoring program. These construction activities took place during 1994 through 1996. A Preliminary Close Out Report documenting construction completion was written and signed in September, 1996. The site is currently in operation & maintenance.

Contact

Remedial Project Manager
Jeffrey Gore
(312) 886-6552
gore.jeffrey@epa.gov

[EPA Home | Region 5 Home | Superfund Home | Comments]
URL: http://www.epa.gov/R5Super/npl/ind/IND050530872.htm
This page last updated on August 29, 1999

Pages Maintained By
Jim Rittenhouse

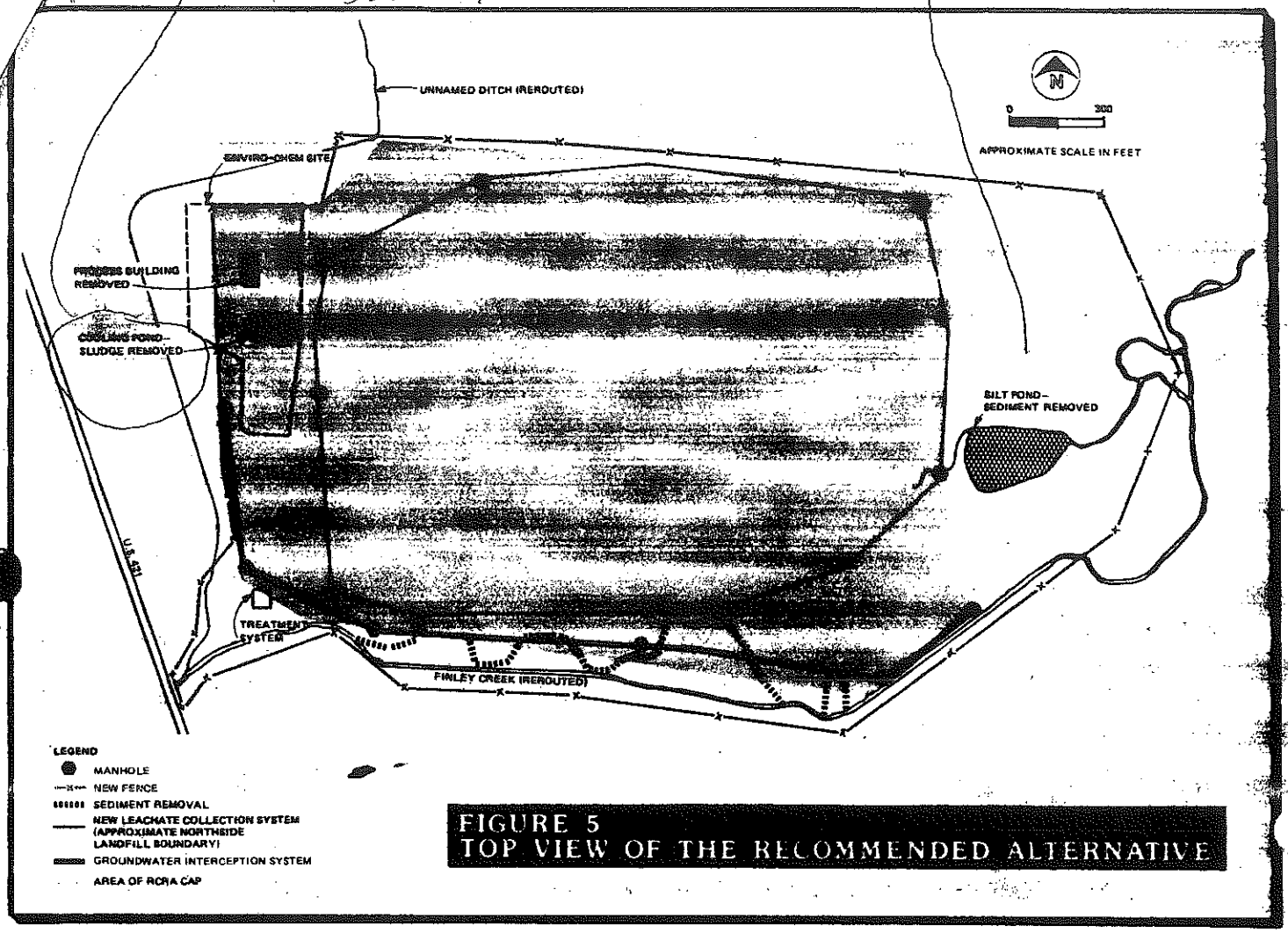


FIGURE 5
TOP VIEW OF THE RECOMMENDED ALTERNATIVE

OPPORTUNITIES FOR PUBLIC INVOLVEMENT

Public Meeting on the Feasibility Studies and Combined Alternatives Analysis for the Northside and Enviro-Chem Sites

U.S. EPA will hold a public meeting to present the findings of the Feasibility Studies and the Combined Alternatives Analysis for Northside and Enviro-Chem and to respond to questions and comments from the public about these documents and U.S. EPA's recommended alternative for the sites.

DATE: December 17, 1986

TIME: 7 p.m.

LOCATION: Zionsville Town Hall
110 South 4th Street
Zionsville, Indiana

Public Comment Period on the Feasibility Studies and the Combined Alternatives Analysis for the Northside and Enviro-Chem Sites

U.S. EPA encourages the public to review the Feasibility Studies and the Combined Alternatives Analysis and to submit written comments. You can find copies of these documents and other site-related information in Zionsville at the Town Hall at 110 South 4th Street and at the Hussey Memorial Library at 225 West Hawthorne Street. Copies are also available from the U.S. EPA Region V office at the address listed below. Comments must be postmarked by February 10, 1987. Send comments to:

Art Gasior
Community Relations Coordinator
U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

If You Have Questions about this fact sheet or the Feasibility Studies and Combined Alternatives Analysis reports for the Northside and Enviro-Chem sites, or if you would like to request copies of these documents, contact:

Art Gasior
Community Relations Coordinator
(312) 886-6128

Karen Vendl
Remedial Project Manager
Hazardous Waste Enforcement Branch
(312) 886-4739

U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

TOLL FREE: (800) 621-8431
8:30 a.m. to 4:30 p.m. Central Time

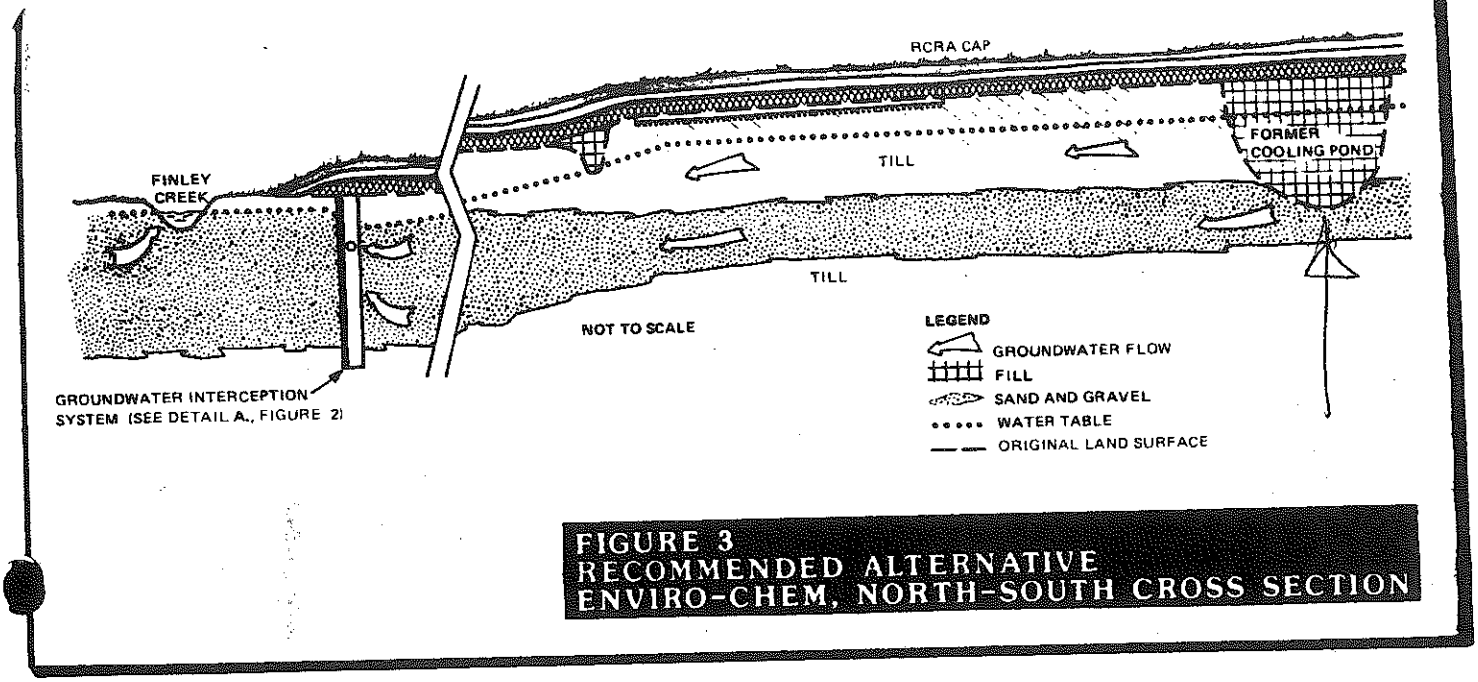


FIGURE 3
RECOMMENDED ALTERNATIVE
ENVIRO-CHEM, NORTH-SOUTH CROSS SECTION

- **Contaminated liquid seeping from the landfill ("leachate") could be collected and treated** to prevent the spread of contaminants in ground or surface waters. A leachate collection system uses perforated pipes laid in trenches ("French Drains") surrounding the landfill to capture leachate. A cross section of a leachate collection system for the Northside site is shown in Figure 2 (Detail B). Leachate collected by this system would then be treated in a two-stage treatment system to remove the contaminants. In the first stage, metals and other inorganic chemicals would be allowed to settle out of the contaminated liquid — a process known as "precipitation." In the second stage, other contaminants would be removed by a process combining biological treatment and carbon adsorption. Biological treatment would involve the use of microorganisms that ingest some of the organic compounds. The remaining organic compounds would stick ("adsorb") to the surface of the carbon in the system. Contaminated biological and metal sludges remaining after treatment would then be disposed of at a licensed facility. The cleaned water would be discharged into Finley Creek after the appropriate permits were obtained.
- **Groundwater interception and treatment systems could be used to "intercept" contaminated groundwater** moving away from the site before contaminants reach the surface water. Figures 2 (Detail A) and 3 show cross sections of groundwater interception systems proposed for the Northside and Enviro-Chem sites, respectively. French Drains (similar to ones used in the leachate collection system, but deeper) would be used to collect and transport the contaminated groundwater to the two-stage treatment system described for leachate.
- **Systems to isolate the groundwater ("groundwater isolation") could be installed** to collect water in French Drains. The French Drains used in groundwater isolation would be even deeper than the French Drains used in the groundwater interception system. After about five years of collection, the level of the groundwater should be lower than the contaminated soil layers, restricting the movement of contaminants away from the sites. Groundwater collected in the trenches would be piped to the two-stage treatment system described previously for leachate treatment.
- **Special wells could be installed at the Enviro-Chem site to pull air through the contaminated soil, drawing the contaminants out of the soil (a process known as "vapor extraction").** The contaminated air would then be treated in a carbon adsorption system to remove the contaminants. Soil vapor extraction removes the contaminants from the soil so that they will not wash down into the groundwater or otherwise move off the site if the site is disturbed in the future.
- **Contaminated sludge in the former cooling pond at the Enviro-Chem site could be excavated and disposed of** at a licensed disposal facility.
- **Soil at the Enviro-Chem site could be incinerated.** The contaminated soil would be excavated and burned in an incinerator at the site. Incineration destroys the organic compounds in the soil. The ashes resulting from the burning would be placed back on the site before the site is capped.
- **A lined "RCRA landfill" meeting federal standards could be constructed** on the northern part of the Northside site. Contaminated soils would be removed and then put into the RCRA landfill before the site is capped. The lined RCRA landfill would block the escape of contaminants from the site into the soil or groundwater.
- In addition to the measures described above, U.S. EPA could **monitor the groundwater and surface water** around the two sites to ensure that the actions taken are effective.

REMEDIAL ALTERNATIVES EVALUATED BY U.S. EPA

For the Combined Alternatives Analysis, U.S. EPA and IDEM evaluated nine different combinations of the measures described previously. These combinations, known as reme-

- Thirty-nine subsurface soil samples, primarily from the glacial till, indicated organic and inorganic compound contamination on all sides of the landfill. The greatest concentration of contaminants is located in the southwest part of the site in the shallow sand and gravel formation.

- Leachate liquid and three leachate sediment analyses showed organic and inorganic contaminants in samples from the northwest corner, the east side, and the southwest corner of the site.

- Surface water and sediment samples indicated the greatest concentrations of contaminants in the southwest corner of the site.

- Groundwater samples from both the glacial till and the sand and gravel water-bearing units showed contamination. The shallower glacial till unit was contaminated on all sides of the landfill. The deeper sand and gravel unit showed the greatest contamination at the southwest edge of the site and to a less extent on the southeast side, thus confirming a northeast to southwest regional groundwater flow pattern.

- Low concentrations (four orders of magnitude below EPA health criteria) of phenols were detected in two of the five residential wells sampled. The source is undetermined.

ECC Results:

- Onsite soil samples showed that cadmium, lead and zinc were reported in more than one sample at concentrations exceeding the typical range in soils.

- Inorganic (i.e. cadmium, lead, zinc) contamination of the soil is greatest in the near-surface (0-1 feet) soil at the northern portions of the site.

- Organic compounds were found to be widespread. The compounds and/or that were on site in the highest concentrations are volatile organic compounds and phthalates.

- Results of the hydrogeologic investigations indicate a shallow saturated

- The shallow sand and grav aquifer, a silty clay and clayey s zone, and a deep confined aquife These results are similar to the NS site.

- The deep confined aquifer below t site has not been found to be co taminated.

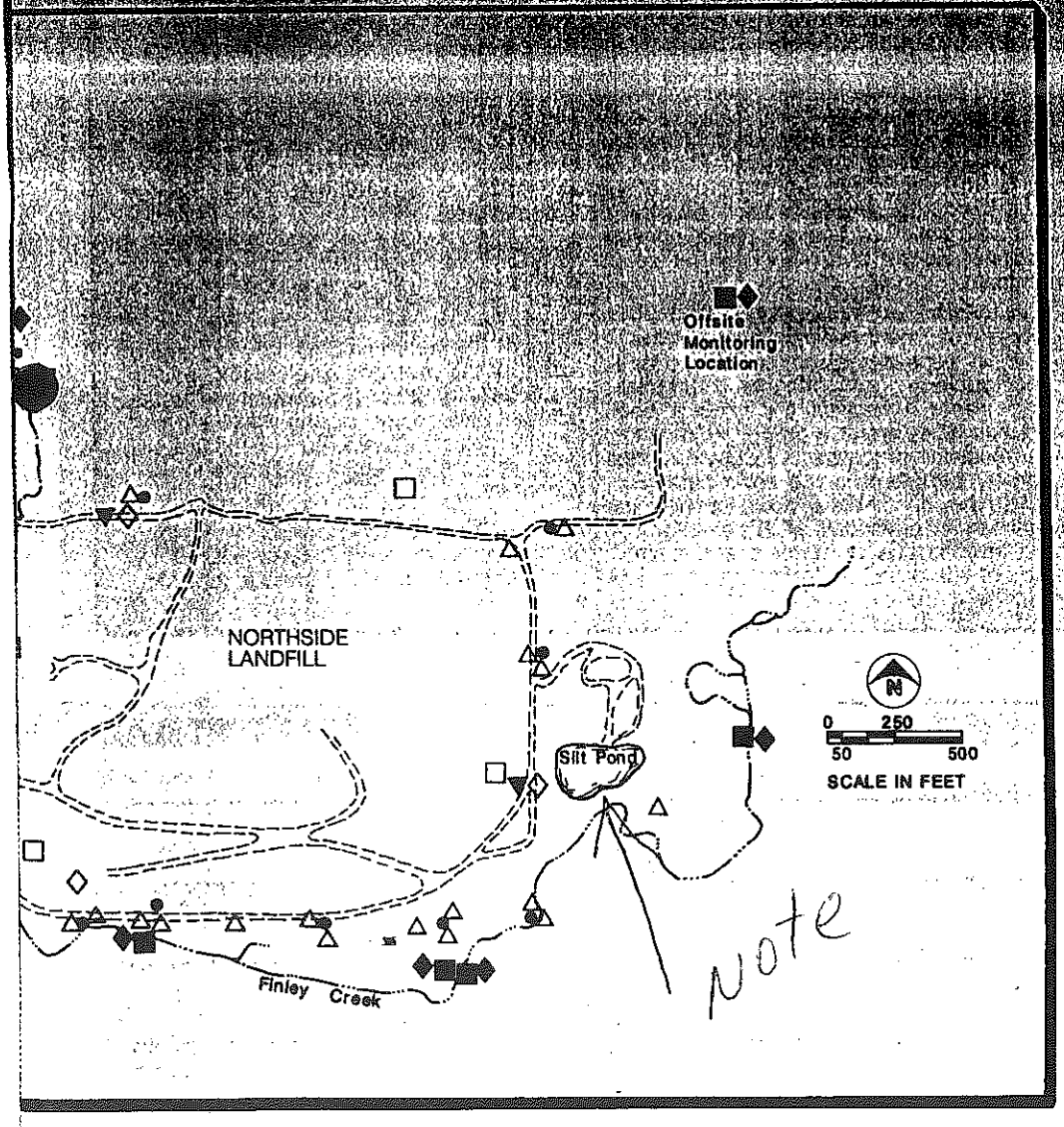
- Migration of contaminants to near residential wells is not indicated.

- Migration of contaminants to shallow saturated zone has occ red. This is evidenced by high lev of organic contaminants.

- The results from three monitori wells indicated organic and in ganic contamination in the shall sand and gravel aquifer at the

- Organic contamination was found Finley Creek offsite. Inorganic co tamination of surface water (ha level) does not appear to be occ ring offsite.

- Inorganic and organic contamina were found in sediments from Fin Creek and unnamed ditch. The in ganic contamination was limited lead from unnamed ditch.



ENDANGERMENT ASSESSMENT

An Endangerment Assessment (E was prepared as part of the RI for b sites. The EA is a qualitative est the magnitude of potential harm ic health and the environment caus by a release of a hazardous s stance(s) from either ECC or NSL. assessment was prepared assum that no measures will be taken minimize the release of a hazard waste, and that no action will be ta to restrict human or biological popu tions from living on or next to the s Based on these assumptions and information obtained in the RI's, it determined that there would be a ris human health. These health risks clude:

- Ingestion of soil or sediments concentrations of lead, pesticides PCB's.
- Consumption of groundwater s plies developed in either the gla till or sand and gravel formations concentrations of barium, le nickel, and volatile organic c pounds.
- Ingestion of fish that bioconc trated contaminants from surf waters, i.e., Finley Creek.

These risks are limited to situ ns quiring site use, i.e., residen , c mercial, industrial, or recreational u At present, limitations on the future of either site should be considered, migration of known contaminants gated to protect offsite environmen

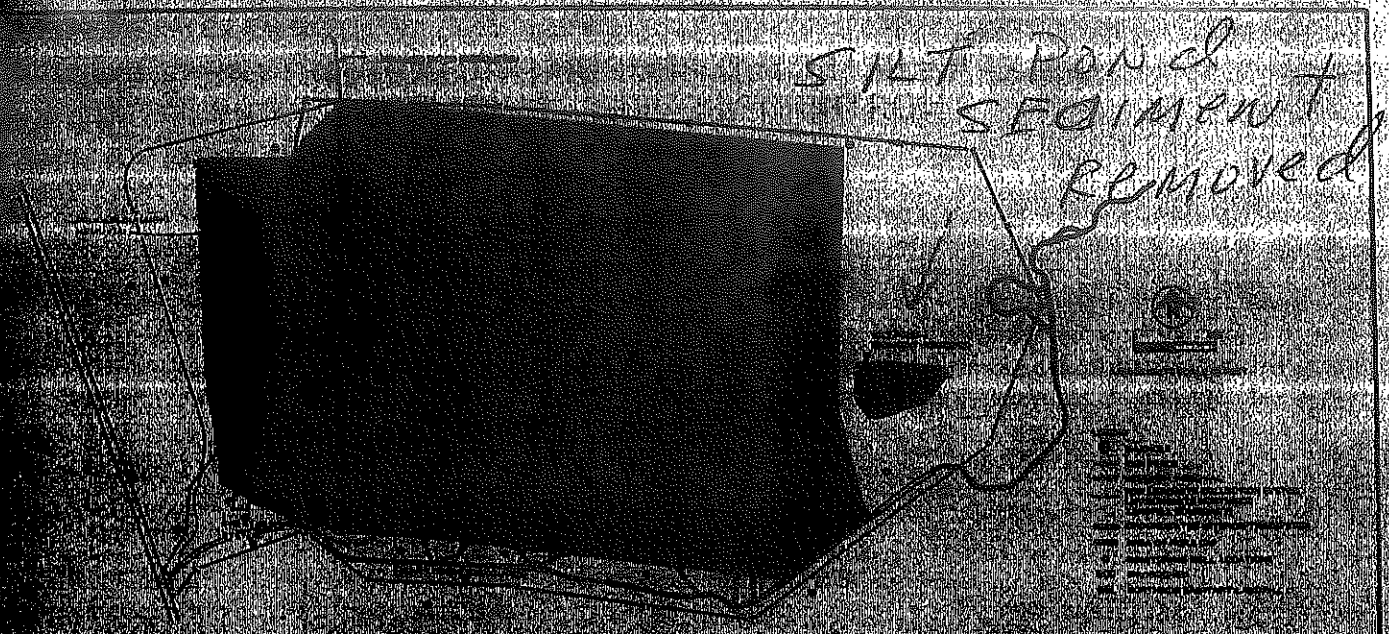


FIGURE 3 OVERVIEW OF THE RECOMMENDED ALTERNATIVE

GLOSSARY

Gas A discharged gas or fluid, usually a waste product.

Ground Water Water which fills the spaces between soil, sand, rock, and gravel particles beneath the earth's surface.

Leachate A liquid which has percolated through contaminated material such as soil or garbage.

Multi-Layered Cap A barrier placed over a hazardous waste site designed to minimize precipitation, infiltration, stabilize the surface, and to reduce erosion and off-site migration of contaminants.

Potentially Responsible Party (PRP) An individual, company, or government identified as potentially liable for release of hazardous substances to the environment. By federal law, such parties may include generators, transporters, storers, and disposers of hazardous waste, as well as present and past site owners and operators.

Remedial Action A series of cleanup activities designed to produce a permanent solution to hazards posed by an uncontrolled hazardous waste site.

Resource Conservation and Recovery Act (RCRA) A federal law passed in 1976 which regulates the generation, transportation, treatment, storage, and disposal of hazardous materials.

Sediment Decomposing matter, mud, sand, and soil which settles at the bottom of a surface water body.

MAILING LIST ADDITIONS

If you want your name and address to be placed on the mailing list to receive information on the Northside / Enviro-Chem site, please fill out and mail this form to:

Art Gasior
Office of Public Affairs
U.S. EPA - Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Name: _____

Address: _____

_____

Telephone: _____

Affiliation: _____

9/13/91
(signed)

Declaration for the Record of Decision Amendment

Site Name and Location

Northside Sanitary Landfill, Zionsville, Indiana

Statement of Basis and Purpose

This decision document, together with a Record of Decision dated September 25, 1987, represents the selected remedial action for the Northside Sanitary Landfill developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This decision is based on the contents of the administrative record for the Northside Sanitary Landfill site. The attached index identifies the items which comprise the administrative record upon which the decision to amend the 1987 Record of Decision, and the selection of the modified remedial action is based.

The State of Indiana concurs in the remedy selected by U.S. EPA for the Northside Sanitary Landfill site.

Description of the Remedy

The primary reason for amending the 1987 Record of Decision is to reflect the decision to implement separate, complementary remedies for the Environmental Conservation and Chemical Corporation and Northside Sanitary Landfill sites, instead of the one combined remedy selected in the 1987 Record of Decision, and secondarily, to modify the selected remedy.

For the Northside Sanitary Landfill site, the major components of the remedial action as modified, include:

- Access restrictions

- RCRA Subtitle C cap and gas venting system

- Hydraulic isolation wall south and west of NSL and north of Finley Creek

- Leachate collection trench north, northwest and east of NSL

- Combined ground-water and leachate collection trench south and southwest of NSL

- Pipeline to the Indianapolis Department of Public Works sewer system, and treatment of the ground-water and leachate at the Indianapolis publicly-owned treatment works (POTW) or

elsewhere in the event that the POTW is unavailable

- Ground-water, surface-water, and leachate monitoring program.

Declaration

The selected remedy, as modified herein, is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective.

This remedy satisfies the statutory preference for remedies that employ treatment, that reduce toxicity, mobility or volume as a principal element, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining on-site, pursuant to Section 121(c) of CERCLA, a review will be conducted at the site within five years after commencement of the remedial action and at least every five years thereafter to ensure that the remedy continues to provide adequate protection of human health and the environment.

July 31, 1991
Date

FOR Valdas V. Adamkus
Regional Administrator
Region V

BARNES & THORNBURG LLP

11 South Meridian Street
Indianapolis, Indiana 46204-3535 U.S.A.
(317) 236-1313
Fax (317) 231-7433

www.btlaw.com

November 8, 2004

VIA CERTIFIED MAIL

Lori F. Kaplan, Commissioner
Indiana Department of Environmental Management
P.O. Box 6015
100 North Senate, Room N1301
Indianapolis, Indiana 46206-6015

Re: Request for Reimbursement from Northside Sanitary Landfill Post-Closure Trust Fund

Dear Commissioner Kaplan:

This letter is written on behalf of our clients, the Trustees of the Northside Sanitary Landfill ("NSL") Superfund Site Trust Fund ("Trustees"). Pursuant to the RCRA regulations at 329 I.A.C. 3.1-14-15(k), the Trustees hereby request that you direct the trustee of the Northside Sanitary Landfill, Inc. ("NSLI") RCRA post-closure trust fund to pay all money in that account (approximately $50,000) to the NSL Trustees to reimburse them for post-closure costs they have incurred at the NSL Site north of Zionsville. As explained more fully below, the Trustees are required to oversee implementation of the Superfund remedy for NSL pursuant to a federal consent decree entered in *United States of America vs. Aluminum Company of America, et al.*, (S.D. In.), Cause No. IP91-591 C. Construction of the NSL closure remedy was completed in February 1998, and costs incurred since that date qualify as valid post-closure costs that are reimbursable from NSLI's post-closure fund.

This request is similar to an earlier request approved by IDEM and U.S. EPA in 1998 in which both agencies jointly directed that the trustee of NSLI's *closure fund* pay all the money in that fund to the NSL Trustees to reimburse them for closure costs they had incurred. Now that the NSL Trustees have incurred valid post-closure costs, it is appropriate for IDEM and EPA to direct reimbursement of those costs from NSLI's *post-closure fund.*

I. Introduction.

Indiana received authorization for its hazardous waste management program on August 18, 1982 (*see* 47 Fed. Reg. 35970 (1982)). Since that date, Indiana's approved hazardous waste management program has operated in lieu of U.S. EPA's program, including the financial assurance requirements contained in 40 C.F.R. 265, Subpart H (Indiana's equivalent rules are found at 329 I.A.C. 3.1-14). Prior to August 18, 1982, U.S. EPA was responsible for enforcing the financial assurance requirements. Since August 18, 1982, people in Indiana seeking reimbursement from closure or post-closure trust funds have had to obtain approval for such reimbursement from IDEM.

The Northside Sanitary Landfill post-closure trust fund was initially established by NSLI in the early 1980s before Indiana received RCRA authorization from EPA. NSLI's post-closure trust fund was originally set up with NBD Bank, which served as the trustee for the post-closure trust fund. Given bank mergers and acquisitions, this fund is now managed by Union Planters Bank, N.A. This fund had $49,464.20 in it as of September 30, 2004. The account number is 5010003500. Attachment A is the most recent account balance statement from Union Planters.

NSL became a RCRA interim status facility in 1980. One of NSL's operators, NSLI, established closure and post-closure trust funds for the site under the RCRA rules. However, these accounts were never adequately funded, and NSL's owners and operators long ago abdicated their legal responsibilities for proper management, closure and post-closure of NSL. The NSL Site was placed on EPA's National Priorities List in 1984 and has since been handled as a federal Superfund site. In 1991, the federal district court in Indianapolis entered the consent decree ("Consent Decree" or "Decree") which was executed by EPA, the State, and several PRPs who agreed to finance completion of the remedy required by that Decree.

The NSL Trustees are trustees of the trust established pursuant to the 1991 Consent Decree. In 1993, the NSL Trustees reached an agreement with NSL's owners and operators in which, among other things, those owners/operators assigned to the NSL Trustees all rights and interests in NSLI's closure and post-closure trust accounts. This assignment was made in recognition of the fact that the Trustees, not the Landfill owners/operators, would perform the necessary closure and post-closure activities.

Because NSL had been a RCRA TSD facility, the 1991 Decree (and EPA's associated "Record of Decision" or "ROD") identified Indiana's hazardous waste closure and post-closure rules as one of the legally "applicable or relevant and appropriate requirements" ("ARARs") applicable to the NSL Site. As a result, the final remedial design plans and specifications approved by EPA (and Indiana) in 1994 call for the implementation of remedial measures that include, as a component, RCRA closure and post-closure work.

II. Trustees' Post-Closure Activities and Costs.

As required by the 1991 Decree, the NSL Trustees completed "final closure" of the NSL Site in February 1998. In 1998, IDEM and EPA authorized and directed all money being held in NSLI's closure trust fund to be paid to the NSL Trustees to reimburse them for closure costs they had incurred (*see* Attachment B). All costs incurred by the NSL Trustees since closure was completed have been post-closure operation and maintenance costs of the type required by the RCRA post-closure rules at 40 C.F.R. § 265, which have been incorporated by reference at 329 I.A.C. § 3.1-10.

The post-closure expenses that the Trustees have incurred and continue to incur pursuant to the 1991 Decree and RCRA's applicable requirements include groundwater/leachate collection and disposal; groundwater sampling and analysis; inspection and maintenance of the remedy; and regulatory reporting. We have broken down and described below a portion of the post-closure work performed which provides the basis for this reimbursement request:

1. Groundwater/leachate collection and disposal

RCRA's post-closure standards require the control, to the extent necessary to protect human health and the environment, of post-closure escape of hazardous waste or constituents to ground water or surface water. *See* 40 C.F.R. § 265.111; *See also* 40 C.F.R. §265.310(b)(2). Under the NSL Consent Decree, the Trustees are required to maintain a groundwater/leachate collection system to avoid the post-closure escape of constituents to ground water and surface water. As of March 31, 2004, the Trustees have collected and transported off-site for treatment and disposal approximately 2,890,000 gallons of groundwater/leachate at a cost of approximately $325,480. The Trustees' environmental consultant, ENVIRON International ("ENVIRON"), prepared a memorandum detailing a subset of these costs along with copies of invoices and cancelled checks. That information is provided in Attachment C. The attached documents cover costs incurred from March 2003 to March 2004 of approximately $51,114. We limited our documentation to that period because that figure is more than the amount in the NSLI post-closure trust account.

2. Groundwater sampling and analysis

RCRA also requires that groundwater be monitored and sampled during post-closure activities. *See* 40 C.F.R. §§ 265.111; 265.310(b)(3); and 265.90. ENVIRON has conducted a total of ten groundwater sampling events at the Site from May 1999 to March 2004 at a cost of approximately $200,000. We have similar documentation for this cost but have not burdened you with that additional detail, since the groundwater/leachate costs described above and documented in Attachment C already exceed the amount in NSLI's post-closure fund.

The NSL Trustees have incurred, and continue to incur, significant post-closure costs well in excess of the $49,464.20 currently available in the post-closure trust account. The Consent Decree requires that the Trustees continue to manage groundwater/leachate and collect groundwater samples until the cleanup goals are met.

III. Conclusion.

The Trustees, as persons authorized to oversee post-closure work at NSL and as the assignees of NSLI's rights in the NSLI post-closure fund, are authorized to request reimbursement from NSLI's post-closure fund of legitimate post-closure costs they have incurred. Accordingly, the Trustees hereby request that the Commissioner direct Union Planters Bank, trustee of the NSLI post-closure trust fund, to pay to the NSL Trustees all the money remaining in that fund, less legitimate trust expenses and fees incurred in wrapping up the affairs of that trust. In addition, and if necessary, we also request that the Commissioner (a) inform EPA's Regional Administrator, Region 5 (the person still listed in the never-revised NSLI Trust Agreement as the one to direct payments from the trust), that the Trustees have incurred expenses in excess of the amount remaining in the post-closure account, and have requested reimbursement from the trust pursuant to I.A.C. 3.1-14-15(k); and (b) request that the Regional

Administrator also direct the trustee of Account No. 5010003500 at Union Planters Bank, N.A., to terminate the post-closure trust and remit the final balance to the Trustees pursuant to the Trust Agreement.

Thank you for your assistance in this matter. If you have any questions concerning our request or the costs incurred by the Trustees, please do not hesitate to call.

Sincerely,

John M. Kyle III

JMK/GRD:je

cc: Thomas Skinner, U.S. EPA Region V, Regional Administrator
John Tielsch, Esq., U.S. EPA Region V

STATE of INDIANA

DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS, 46225

105 South Meridian Street

February 9, 1987

Mr. Hak Cho
U.S. EPA, Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Closure/Post Closure Plan
Northside Landfill
IND 050530872

Dear Mr. Cho:

The Indiana Department of Environmental Management (IDEM) has determined that RCRA closure/post closure and corrective action measures for Northside Landfill may be achieved more expeditiously if addressed pursuant to CERCLA activities. This decision is based upon the March 27, 1986, "CERCLA Remedial Inventory Report" prepared by EPA contractor CH2M Hill, containing detailed remedial action plans, which include a RCRA cap, groundwater monitoring, groundwater interception and treatment, leachate collection, and treatment. The report's proposal, while not identical to the interim status requirements of closure/post-closure, serves to fulfill the closure performance standards of controling and minimizing the escape of hazardous waste constituents from the site.

Furthermore, Northside Landfill lacks the financial resources to undertake the necessary RCRA closure/post-closure and corrective action measures and such activities are unlikely to be performed by the Northside Landfill owner/operator. Appropriate CERCLA financed remedial action can, however, occur more expeditiously.

The CERCLA remedial action outlined in the CH2M Hill report is being reviewed for implementation by the IDEM. Mr. John Buck of the IDEM Environmental Response Section is the coordinator of this CERCLA activity. Mr. Buck may be reached at AC 317/232-5041.

If you require additional information regarding our request for the Northside Landfill closure/post-closure pursuant to CERCLA activities, please contact Ms. Cynthia Moore at AC 317/232-3243.

Very truly yours,

Guinn Doyle

Guinn Doyle, Chief
Hazardous Waste Management Branch
Solid and Hazardous Waste Management

CM/es
cc: Mr. John Buck
Mr. Terry Gray
Mr. Jim Hunt
Mr. Tom Russell
Mr. Jack Corpuz
Ms. Karyl Schmidt
Ms. Christa Hensen

MEMORANDUM

To: Permit File

From: Todd D. Ramaly/Felix Lyczko

Date: February 3, 2000

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EPA United States Environmental Protection Agency Region 5

NPL Fact Sheet

NORTHSIDE SANITARY LANDFILL, INC.

EPA REGION 5
Boone County
Zionsville, Union Township,
about 10 miles northwest of Indianapolis
6th Congressional District

INDIANA
EPA ID# IND050530872

accepted 7/97.

Last Update: August 1999

Site Description

The Northside Sanitary Landfill (NSL) covers approximately 65 acres of a 180-acre parcel of land. Over 16 million gallons of hazardous wastes have been deposited in the landfill. The NSL began operating in the 1950s as an open dump and was licensed by the state in 1971 to accept hazardous wastes. From 1972 to 1973, numerous operating deficiencies including the failure to cover refuse, surface burning, underground fires, leachate and vermin problems resulted in orders from the Indiana State Board of Health (ISBH) to cease operations. In 1982, the owner at the direction of the ISBH, installed a leachate collection system and three submerged leachate collection tanks on the western side of the site. After the owner removed 400,000 gallons of leachate from the three tanks and disposed of it by spraying it on the landfill, the Indiana Division of Land Pollution Control advised the owner that leachate would have to be solidified prior to disposal. By early 1983, the state Environmental Management Board issued a notice of violation and ordered the owner to stop accepting hazardous waste. Approximately 50 residences are located within one mile of the site and 1,750 residences located within three miles of the site use wells for drinking water. The nearest town is Zionsville, Indiana which is about six miles south of NSL. An unnamed ditch runs along the east side of the site into Finley Creek. Finley Creek flows into Eagle Creek which runs for 10 miles before it empties into Eagle Creek Reservoir, which supplies approximately six percent of the drinking water for the city of Indianapolis.

Site Responsibility: This site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL Listing History: Proposed Date: 09/08/83
Final Date: 09/21/84

Threats and Contaminants

Groundwater, soils, surface water, and sediments have been contaminated with pesticides, acids, oils, metals, and volatile organic compounds (VOCs) including benzene and trichloroethylene (TCE). Potential health risks exist from accidental ingestion of contaminated soils and sediments. Contaminated landfill leachate and runoff into surface water may also pose helath risks to humans or wildlife in and around the water.

Cleanup Progress

The Remedial Action (RA) components for NSL listed in the 1987 Record of Decision (ROD), 1991 ROD amendment, and 1991 Consent Decree include: a Resource Conservation and Recovery Act (RCRA) hazardous waste cap with gas venting; a hydraulic isolation wall on the south and west sides of the landfill; a combined leachate/on-site groundwater collection system; a transfer station for collection and storage of leachate/on-site ground water to be trucked for disposal to an off-site treatment plant; a site fence; and a ground water and leachate monitoring program. These construction activities took place during 1994 through 1996. A Preliminary Close Out Report documenting construction completion was written and signed in September, 1996. The site is currently in operation & maintenance.

Contact

Remedial Project Manager
Jeffrey Gore
(312) 886-6552
gore.jeffrey@epa.gov

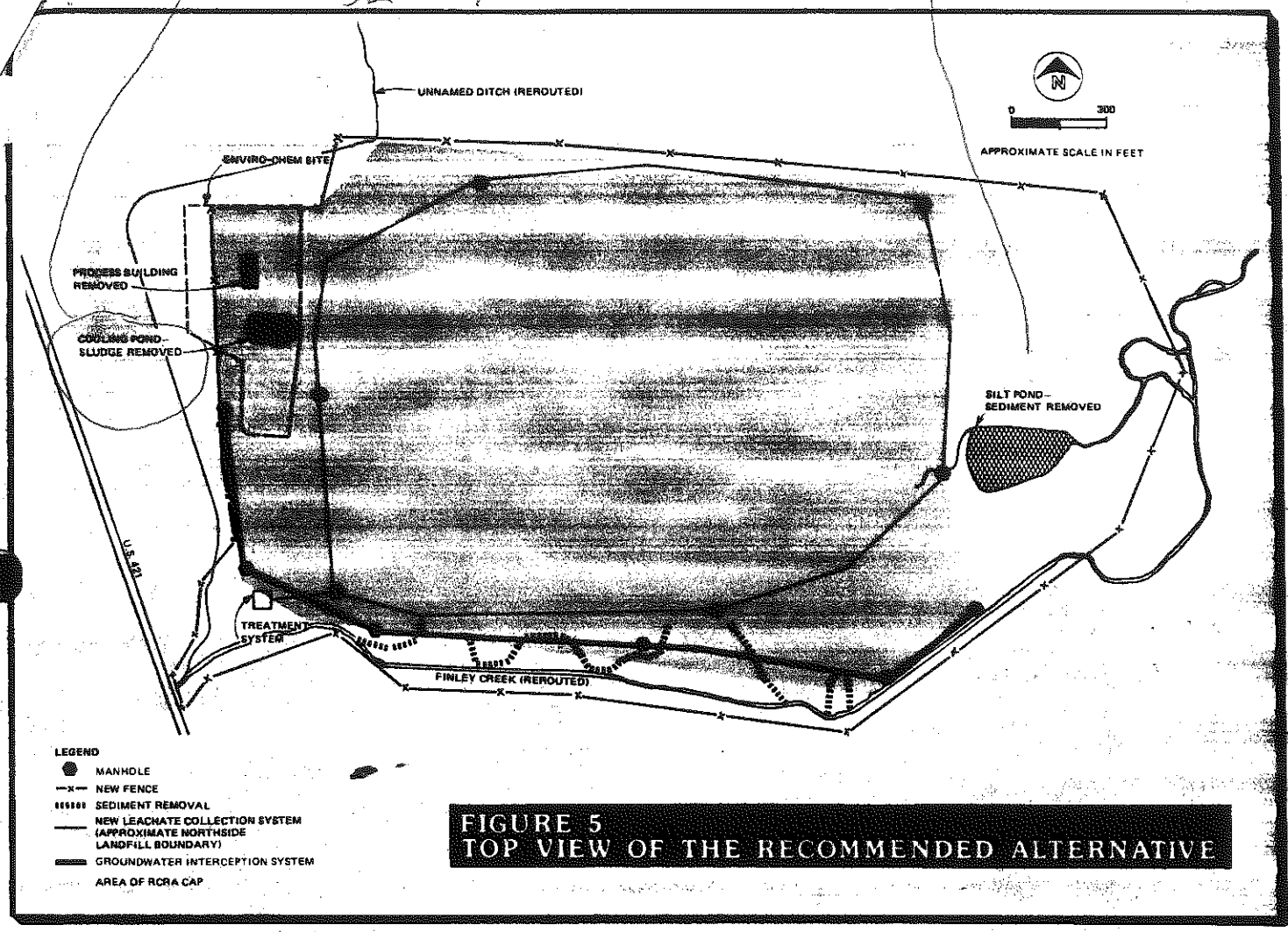


FIGURE 5
TOP VIEW OF THE RECOMMENDED ALTERNATIVE

OPPORTUNITIES FOR PUBLIC INVOLVEMENT

Public Meeting on the Feasibility Studies and Combined Alternatives Analysis for the Northside and Enviro-Chem Sites

U.S. EPA will hold a public meeting to present the findings of the Feasibility Studies and the Combined Alternatives Analysis for Northside and Enviro-Chem and to respond to questions and comments from the public about these documents and U.S. EPA's recommended alternative for the sites.

DATE: December 17, 1986

TIME: 7 p.m.

LOCATION: Zionsville Town Hall
110 South 4th Street
Zionsville, Indiana

Public Comment Period on the Feasibility Studies and the Combined Alternatives Analysis for the Northside and Enviro-Chem Sites

U.S. EPA encourages the public to review the Feasibility Studies and the Combined Alternatives Analysis and to submit written comments. You can find copies of these documents and other site-related information in Zionsville at the Town Hall at 110 South 4th Street and at the Hussey Memorial Library at 225 West Hawthorne Street. Copies are also available from the U.S. EPA Region V office at the address listed below. Comments must be postmarked by February 10, 1987. Send comments to:

Art Gasior
Community Relations Coordinator
U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

If You Have Questions about this fact sheet or the Feasibility Studies and Combined Alternatives Analysis reports for the Northside and Enviro-Chem sites, or if you would like to request copies of these documents, contact:

Art Gasior
Community Relations Coordinator
(312) 886-6128

Karen Vendl
Remedial Project Manager
Hazardous Waste Enforcement Branch
(312) 886-4739

U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

TOLL FREE: (800) 621-8431
8:30 a.m. to 4:30 p.m. Central Time

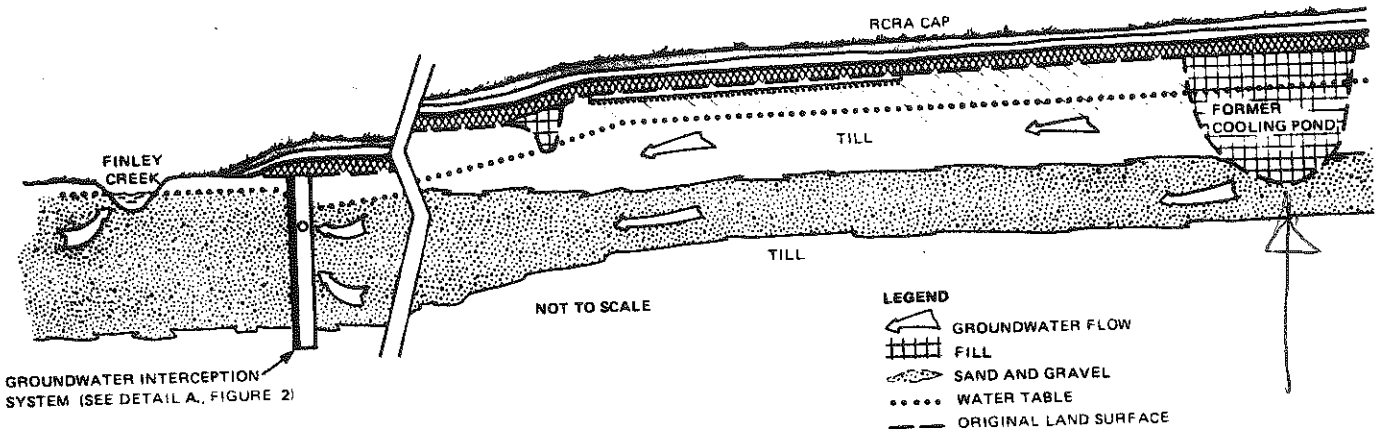


FIGURE 3
RECOMMENDED ALTERNATIVE
ENVIRO-CHEM, NORTH-SOUTH CROSS SECTION

- **Contaminated liquid seeping from the landfill ("leachate") could be collected and treated** to prevent the spread of contaminants in ground or surface waters. A leachate collection system uses perforated pipes laid in trenches ("French Drains") surrounding the landfill to capture leachate. A cross section of a leachate collection system for the Northside site is shown in Figure 2 (Detail B). Leachate collected by this system would then be treated in a two-stage treatment system to remove the contaminants. In the first stage, metals and other inorganic chemicals would be allowed to settle out of the contaminated liquid — a process known as "precipitation." In the second stage, other contaminants would be removed by a process combining biological treatment and carbon adsorption. Biological treatment would involve the use of microorganisms that ingest some of the organic compounds. The remaining organic compounds would stick ("adsorb") to the surface of the carbon in the system. Contaminated biological and metal sludges remaining after treatment would then be disposed of at a licensed facility. The cleaned water would be discharged into Finley Creek after the appropriate permits were obtained.
- **Groundwater interception and treatment systems could be used to "intercept" contaminated groundwater** moving away from the site before contaminants reach the surface water. Figures 2 (Detail A) and 3 show cross sections of groundwater interception systems proposed for the Northside and Enviro-Chem sites, respectively. French Drains (similar to ones used in the leachate collection system, but deeper) would be used to collect and transport the contaminated groundwater to the two-stage treatment system described for leachate.
- **Systems to isolate the groundwater ("groundwater isolation") could be installed** to collect water in French Drains. The French Drains used in groundwater isolation would be even deeper than the French Drains used in the groundwater interception system. After about five years of collection, the level of the groundwater should be lower than the contaminated soil layers, restricting the movement of contaminants away from the sites. Groundwater collected in the trenches would be piped to the two-stage treatment system described previously for leachate treatment.
- **Special wells could be installed at the Enviro-Chem site to pull air through the contaminated soil, drawing the contaminants out of the soil (a process known as "vapor extraction").** The contaminated air would then be treated in a carbon adsorption system to remove the contaminants. Soil vapor extraction removes the contaminants from the soil so that they will not wash down into the groundwater or otherwise move off the site if the site is disturbed in the future.
- **Contaminated sludge in the former cooling pond at the Enviro-Chem site could be excavated and disposed** of at a licensed disposal facility.
- **Soil at the Enviro-Chem site could be incinerated.** The contaminated soil would be excavated and burned in an incinerator at the site. Incineration destroys the organic compounds in the soil. The ashes resulting from the burning would be placed back on the site before the site is capped.
- **A lined "RCRA landfill" meeting federal standards could be constructed** on the northern part of the Northside site. Contaminated soils would be removed and then put into the RCRA landfill before the site is capped. The lined RCRA landfill would block the escape of contaminants from the site into the soil or groundwater.
- In addition to the measures described above, U.S. EPA could **monitor the groundwater and surface water** around the two sites to ensure that the actions taken are effective.

REMEDIAL ALTERNATIVES EVALUATED BY U.S. EPA

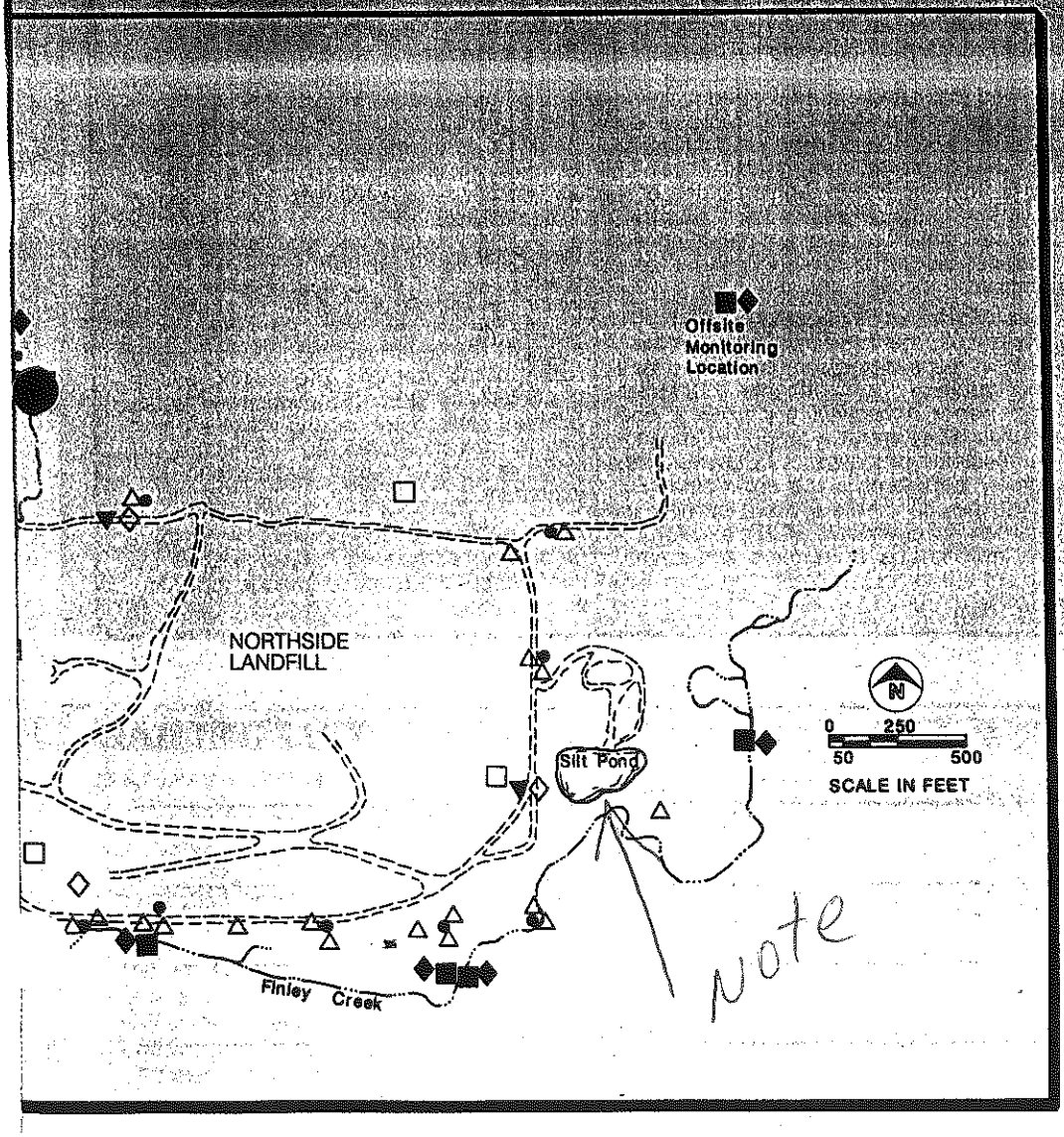
For the Combined Alternatives Analysis, U.S. EPA and IDEM evaluated nine different combinations of the measures described previously. These combinations, known as reme-

Thirty-nine subsurface soil samples primarily from the glacial till, indicated organic and inorganic compound contamination on all sides of the landfill. The greatest concentration of contaminants is located in the southwest part of the site in the shallow sand and gravel formation.

- Leachate liquid and three leachate sediment analyses showed organic and inorganic contaminants in samples from the northwest corner, the east side, and the southwest corner of the site.
- Surface water and sediment samples indicated the greatest concentrations of contaminants in the southwest corner of the site.
- Groundwater samples from both the glacial till and the sand and gravel water bearing units showed contamination. The shallower glacial till unit was contaminated on all sides of the landfill. The deeper sand and gravel unit showed the greatest contamination at the southwest edge of the site and to a less extent on the southeast side, thus confirming a northeast to southwest regional groundwater flow pattern.
- Low concentrations (four orders of magnitude below EPA health criteria) of phenols were detected in two of the five residential wells sampled. The source is undetermined.

ECC Results

- Onsite soil samples showed that cadmium, lead and zinc were reported in more than one sample at concentrations exceeding the typical range in soils.
- Inorganic (i.e. cadmium, lead, zinc) contamination of the soil is greatest in the near-surface (0-3 feet) soil at the northern portions of the site.
- Organic compounds were found to be widespread. The compound groups that were found in the highest concentrations are volatile organic compounds and phthalates.
- Results of the hydrogeologic investigations indicate a shallow saturated zone, a shallow sand and grave aquifer, a silty clay and clayey si zone, and a deep confined aquife These results are similar to the NS site.
- The deep confined aquifer below th site has not been found to be cor taminated.
- Migration of contaminants to nearb residential wells is not indicated.
- Migration of contaminants to th shallow saturated zone has occu red. This is evidenced by high level of organic contaminants.
- The results from three monitorin wells indicated organic and ino ganic contamination in the shallo sand and gravel aquifer.
- Organic contamination was found i Finley Creek offsite. Inorganic cor tamination of surface water, how ever, does not appear to be occu ring offsite.
- Inorganic and organic contaminant were found in sediments from Finle Creek and unnamed ditch. The ino ganic contamination was limited t lead from unnamed ditch.



ENDANGERMENT ASSESSMENT

An Endangerment Assessment (EA was prepared as part of the RI for bot sites. The EA is a qualitative estimate the magnitude of potential harm to pub lic health and the environment cause by a release of a hazardous sub stance(s) from either ECC or NSL. Th assessment was prepared assumin that no measures will be taken t minimize the release of a hazardou waste, and that no action will be take to restrict human or biological popula tions from living on or next to the site Based on these assumptions and th information obtained in the RI's, it wa determined that there would be a risk human health. These health risks i clude:

- Ingestion of soil or sediments wi concentrations of lead, pesticides, PCB's.
- Consumption of groundwater su plies developed in either the glaci till or sand and gravel formations wi concentrations of barium, lea nickel, and volatile organic cor pounds.
- Ingestion of fish that bioconce trated contaminants from surfac waters, i.e., Finley Creek.

These risks are limited to situations r quiring site use, i.e., residential, cor mercial, industrial, or recreational use At present, limitations on the future us of either site should be considered, ar migration of known contaminants mi gated to protect offsite environments

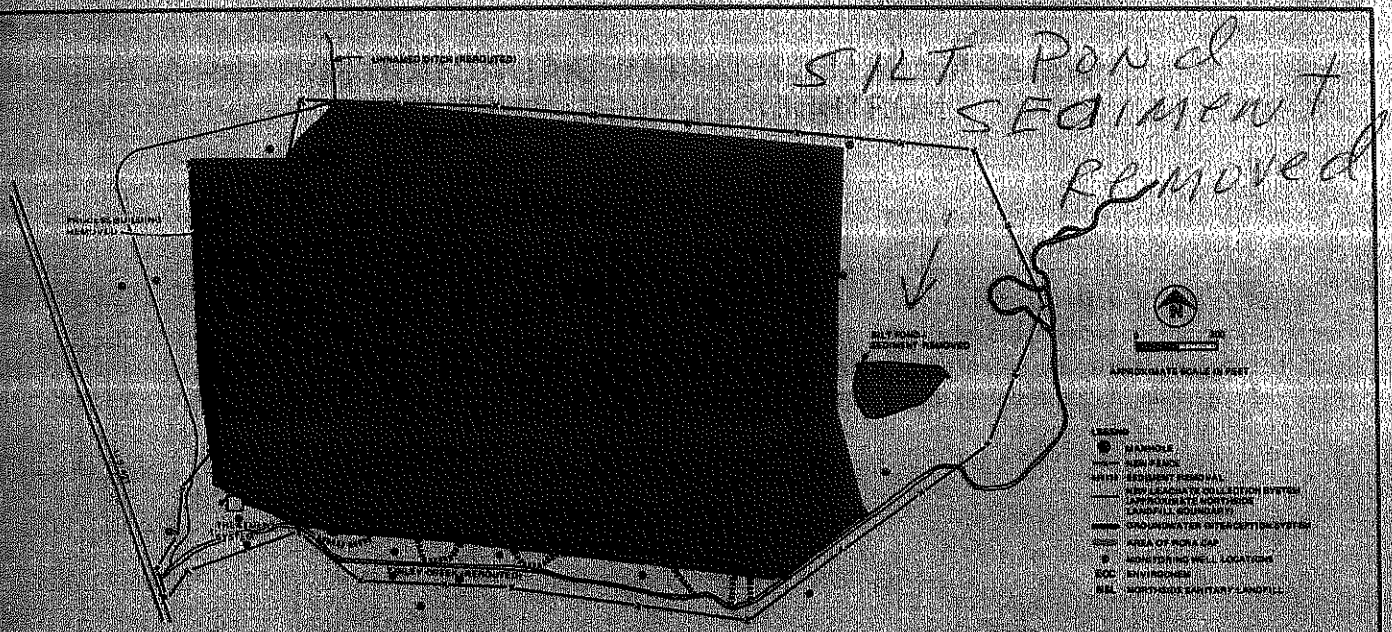


FIGURE 1 OVERVIEW OF THE RECOMMENDED ALTERNATIVE

GLOSSARY

Effluent — A discharged gas or liquid, usually a waste product.

Ground Water — Water which fills the spaces between soil, sand, rock, and gravel particles beneath the earth's surface.

Leachate — A liquid which has percolated through contaminated material such as soil or garbage.

Multi-Layered Cap — A barrier placed over a hazardous waste site designed to minimize precipitation, infiltration, stabilize the surface, and to reduce erosion and off-site migration of contaminants.

Potentially Responsible Party (PRP) — An individual, company, or government identified as potentially liable for release of hazardous substances to the environment. By federal law, such parties may include generators, transporters, storers, and disposers of hazardous waste, as well as present and past site owners and operators.

Remedial Action — A series of cleanup activities designed to produce a permanent solution to hazards posed by an uncontrolled hazardous waste site.

Resource Conservation and Recovery Act (RCRA) — A federal law passed in 1976 which regulates the generation, transportation, treatment, storage, and disposal of hazardous materials.

Sediment — Decomposing matter, mud, sand, and soil which settles at the bottom of a surface water body.

MAILING LIST ADDITIONS

If you want your name and address to be placed on the mailing list to receive information on the Northside / Enviro-Chem site, please fill out and mail this form to:

Art Gasior
Office of Public Affairs
U.S. EPA - Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Name: _____

Address: _____

_____

Telephone: _____

Affiliation: _____

7/31/91
(signed)

Declaration for the Record of Decision Amendment

Site Name and Location

Northside Sanitary Landfill, Zionsville, Indiana

Statement of Basis and Purpose

This decision document, together with a Record of Decision dated September 25, 1987, represents the selected remedial action for the Northside Sanitary Landfill developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This decision is based on the contents of the administrative record for the Northside Sanitary Landfill site. The attached index identifies the items which comprise the administrative record upon which the decision to amend the 1987 Record of Decision, and the selection of the modified remedial action is based.

The State of Indiana concurs in the remedy selected by U.S. EPA for the Northside Sanitary Landfill site.

Description of the Remedy

The primary reason for amending the 1987 Record of Decision is to reflect the decision to implement separate, complementary remedies for the Environmental Conservation and Chemical Corporation and Northside Sanitary Landfill sites, instead of the one combined remedy selected in the 1987 Record of Decision, and secondarily, to modify the selected remedy.

For the Northside Sanitary Landfill site, the major components of the remedial action as modified, include:

- Access restrictions

- RCRA Subtitle C cap and gas venting system

- Hydraulic isolation wall south and west of NSL and north of Finley Creek

- Leachate collection trench north, northwest and east of NSL

- Combined ground-water and leachate collection trench south and southwest of NSL

- Pipeline to the Indianapolis Department of Public Works sewer system, and treatment of the ground-water and leachate at the Indianapolis publicly-owned treatment works (POTW) or

elsewhere in the event that the POTW is unavailable

- Ground-water, surface-water, and leachate monitoring program.

Declaration

The selected remedy, as modified herein, is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective.

This remedy satisfies the statutory preference for remedies that employ treatment, that reduce toxicity, mobility or volume as a principal element, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining on-site, pursuant to Section 121(c) of CERCLA, a review will be conducted at the site within five years after commencement of the remedial action and at least every five years thereafter to ensure that the remedy continues to provide adequate protection of human health and the environment.

Date July 31, 1991

FOR Valdas V. Adamkus
Regional Administrator
Region V

A.4.2

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(Second Revision, January 20, 1985)

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Plate 4	North Farm Cross Sections
Plate 5	North Farm Cross Sections
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Plate 10	Ground Water Flow Map
Plate 11	Ground Water Flow Map

COMMENTS SUMMARY

Deficiencies in the Closure/Post-Closure Care Plan
Northside Sanitary Landfill
IND 050530872

1. The closure and post-closure plans must include all areas which have received hazardous waste after November 19, 1980. The East Farm, Old Farm, and North Farm areas must be included in the plans since hazardous wastes have been disposed of in these areas. (40 CFR 265.110 and 265.300) SEE PAGE 1.

2. The closure activities must not take longer than 180 days to complete, as the owner has not demonstrated that a longer period is necessary. (320 IAC 4-7)(40 CFR 265.113(b) SEE PAGE 1c

3. Provide additional data on the cover to be used. Include drawings showing cover layers and construction sepcifications. Provide engineering calculations showing that the proposed cover will provide long-term minimization of passage of liquids through the cover. Describe the potential for settlement of the cover including short and long-term consolidation of the waste and cover, creep, liquefaction, and reduction of waste volume due to chemical reactions. Provide average depth of frost penetration of the site and describe the effects of freeze/thaw cycles on the cover. Also, the plan does not demonstrate that the soil thickness proposed is sufficient to protect the clay layer from injury by the roots of the vegetation. (265.310) SEE PAGE 17

4. The plan does not make clear what the total soil-sludge thickness would be, and if this thickness is sufficient to protect the clay layer from injury by the roots of vegetation. (265.310) SEE PAGE 12d

5. Provide the results and analysis of the experiment referenced in the plan concerning the use of this sludge in the top soil. What is the environmental impact of using this sludge? (265.310) SEE PAGE 12 d

6. The plan does not include a demonstration that the "creek-run fill drainage layer" will not contribute to slope instability. (265.310) SEE PAGE 12

7. The plan does not address gas control. (265.310) SEE PAGE 12.e

8. The plan does not demonstrate that the two-foot thick clay layer is the optimum thickness for the prevention of infiltration, mitigation of freeze thaw effects, mitigation of differential settlement, and gas control. (265.310) SEE PAGE 14

9. The plan does not demonstrate that there is an adequate volume of cover material available on-site of the textures outlined in the plan. The demonstration must include at

least the following:

a. Present location of the materials
b. Location of borings and samples on a map and cross sections respectively
c. Grain-size distributions
d. Percent fines
e. Atterberg limits
f. Soil classification
g. Water content
h. Compaction tests
i. Permeability tests
j. Mineralogy. (265.310) SEE PAGE 12a

10. The plan does not describe in detail the procedures used to ensure proper compaction and water content of the cover. (265.112 and 265.310) SEE PAGE 16

11. The plan does not adequately describe the compaction equipment. (265.112) SEE PAGE 14c

12. The planned approach to decontamination is not adequate. (265.112) SEE PAGE 13

13. The plan must provide for another method of leachate management. The treatment outlined in the plan requires a Resource Conservation and Recovery Act (RCRA) permit. (264 and 270) SEE PAGE 19a

14. The plan does not provide for periodic monitoring of the leachate level in the collection tanks. The frequency of monitoring and removal must be justified by using a recognized water balance method. This level must meet the closure performance standard outlined in 320 IAC 4-7-1. (40 CFR 265.111) SEE PAGE 18a

15. The plan does not provide a demonstration that the drainage channels surrounding the landfill have sufficient capacity to contain the run-off resulting from a 24-hour, 25-year storm. (320 IA 4-6-1) (40 CFR 265.302(b) SEE PAGE 17c

16. The post-closure inspections outlined in the plan should also include at least the following additional points:

a. Vegetation whose roots may penetrate the clay cover
b. Evidence of burrowing animals
c. Inspection after major storm events
d. Bare spots in cover vegetation
e. Differential settlement (265.117) SEE PAGE 42

17. Post-closure maintenance activities are not adequately addressed. The plan must be specific for correcting problems discovered during the inspections. In addition, the plan does not have a schedule to address care of the vegetation (i.e., sprinkling, fertilization, etc.), or replacement of monitoring wells. SEE PAGE 42b

18. There is evidence that Northside Sanitary Landfill (NSL) is contaminating the groundwater and potentially the surface water in the area. NSL must implement the groundwater quality assessment plan immediately. If groundwater contamination is confirmed, then NSL must implement a remedial action plan which would control, minimize, or eliminate, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constitutents, or leachate from the facility to the ground or surface waters or to the atomosphere. (320 IAC 4-7-1) (40 CFR 265.111(b)
SEE PAGE 44

19. The closure and post-closure plans fail to adequately address groundwater monitoring at the site. The plans must provide at least the following:

a. Number and location of proposed system of monitoring wells
b. Boring logs and graphic logs of monitoring wells
c. Analysis of sediment samples for grain size distribution, soil classification, permeability tests
d. Geologic cross sections in at least two perpendicular directions
e. As-built well construction logs
f. Well development information
g. Sampling and analysis plan
h. Proposed list of parameters to be tested for
i. Sampling frequency
j. Rate and extent of migration of hazardous waste and hazardous waste constituents
k. Data evaluation procedures
l. Groundwater flow maps. (40 CFR 265 Subpart F)

SEE PAGE 43 AND 43b

20. In addition to wells screened in the first coarse - textured water bearing zone, the monitoring system must include wells screened in the water table. SEE PAGE 43

21. The plan does not include the name, address, and phone number of the post-closure facility contact. (265.118) THIS WAS NOTED IN ERROR - SEE PAGE 37.

22. The plan does not describe the type and quantity of seed, fertilizer and mulch required for the cover vegetation. (265.310) THIS WAS NOTED IN ERROR - SEE PAGE 23

23. The plan must include the technical support for all the proposed designs (i.e., data, calculation formulas, references, drawings, etc.). (265.310) SEE APPENDIX C

24. The closure and post-closure cost estimate need to be revised to reflect changes to be made in the plans. (265.1452 and 265.144) SEE PAGE 40

25. Provide a preventative and a corrective maintenance plan including equipment and material requirements dealing with erosion damage repair, cover maintenance and well replacement. (264.310(b) SEE PAGE 42

Attachment

TABLE OF CONTENTS - ADDITIONS

This table addition is a location for corrected and/or page changes added as modifications as required by the Indiana Environmental Management Board on December 7, 1984.

Corrected Pages	Added Pages
i	ii
	iii
	iv
1	1a, b, c
2	
12	12a, b, c, d, e
13	
14	14a, b, c
15	
16	
17	17a, b, c, d, e
18	18a, b
19	19a
40	
42	42a, b
43	43a, b
44	44a, b, c, d

I. SUMMARY

This document describes closure and post-closure activities and schedules for closing sanitary landfill sections, as well as for closure of the hazardous waste disposal site which received hazardous waste from November 19, 1980 through January 24, 1983, as permitted by Interim Status Permit Identification Number IND050530872.

The NSL site is comprised of several tracts as indicated on Plate 1. Note that the North Farm Trace and B Farm Tract area, totalling 64 acres, is identified as a future disposal area. This area is not currently permitted as a sanitary landfill or hazardous waste facility. It is currently used solely as a borrow area for clay cover source.

The hazardous waste co-disposal site is located on approximately 12 acres in the West portion of the East Field and identified as areas 4, 10 and 16 on Topo Map 2. This portion of the landfill will be closed first, and in fact, should be capped prior to November, 1984. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 1). The closure and post-closure of the "Old Farm", also referenced as West Farm Tract, noted on topographical map No. 2, includes Sections 1, 7, 13, 2, 8, 14, 3, 9, 15. The closure of these sections are included in Part V of this plan. Northside's hazardous waste permit application (EPA Form 3510-3) for interim status, submitted to EPA on November 25, 1980 indicated by sketch on page 5, a past treatment and disposal area identified as "old farm area". This same area was also noted on an attached aerial photo. Note that the "old farm area" was established prior to November 19, 1980 and was intended to include Northside's plans at the time for an expanded treatment and disposal area

to include drum storage and treatment concepts. However, these concepts were never put into practice and Northside has not used the "old farm" area as a portion of the hazardous waste landfill, even though it might properly be identified as a portion of a hazardous waste management area by interim permit application. Note further that until November 1980, the eastern limit of the landfill itself (toe of trash) was formed by the north-south boundary between the West Farm Tract and the West Portion of the East Farm Tract (See dashed line on Plate 1). The east-facing slope consisted of a 2 to 4 feet thick cover clay from the adjacent borrow area that was placed on the slope as the landfill height increased in that area. This final clay cover was placed on the east facing slope between 1976 and 1980 as the landfill was built up.

The West Portion of the East Farm Tract, a co-disposal landfill from November 1980 until January 1983, was extended to the east of the West Farm Tract. When operations at this portion of the landfill ceased, a layer of intermediate cover was applied over the entire landfilled area on the East Farm Tract (See Plate 2). The intermediate cover consisted of on-site clay soils spread and compacted with a bulldozer into a 12 to 24 inch thick cap. The resulting contours are shown on Plate 2.

As the landfill in the West Farm Tract is older than the co-disposal landfill in the West Portion of the East Farm Tract, the former will have a higher ground water mound within it than will the latter. With a higher ground water mound to the west, water would tend to move from west to east toward the West Portion of the East Farm Tract rather than in the reverse direction. Also, as the West Farm Tract landfill was constructed earlier than

was the West Portion of the East Farm Tract, and at a time when much of the current large compacting equipment was not available at the landfill, the older trash areas tend to be more porous and hence hold more water and provide for a more rapid build-up of water. This also would encourage flow from west to east rather than the reverse situation.

A buffer zone of trash also occurs between the two fields being considered in this discussion. A 3:1 slope existed from the east facing slope of the landfill on the West Farm Tract. As the landfill is about 70 feet thick at this point, a 3:1 slope provides 210 feet of horizontal offset at the top of the landfill with the toe just at the north-south boundary discussed above. This wedge shaped volume was filled in with household trash only, no co-disposal in this area. This serves as a buffer of compacted trash with soil layers of daily cover within it as an additional retardation of movement of leachate from west to east, that is, from the West Portion of the East Farm Tract into the West Farm Tract.

Finally, because of the higher ground water mound to the west, and the low permeability clay layer between the two areas, the ground water in the West Portion of the East Farm Tract will tend to move radially outward from the center of this landfill, through the trash. As the permeability of water through the trash is several orders of magnitude greater than that through the clay zone between the two landfill areas, water will take the route of least resistance of migration through the trash toward the north, east and south boundaries in the West Portion of the East Farm Tract. Further discussion of this area and Northside's contention that hazardous waste landfill closure is not applicable is presented on pages 2a,

2b, and 2c.

The North Farm Tract has been referenced in the report as a borrow area for clay cover material only. As mentioned in paragraph 2 of this summary, closure is not required since no landfilling has occurred on this North Farm Tract. As a matter of record, a few years ago several 55 gallon drums, with both tops and bottoms removed, were used as a culvert system within the North Farm Tract. These drum shells became crushed by truck traffic use and were discarded. The run-on water was then bridged with a tile culvert.

This closure and post-closure plan has been developed utilizing current Indiana State (320 IAC 4) and Federal Regulations (40 CFR 265) technical standards for hazardous waste sites, even though the major portions of the site contain only sanitary waste and co-disposed special wastes as permitted by the Indiana State Board of Health and regulated only by 320 IAC 5. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 2). Both 40 CFR 265.113 (b) and 320 IAC 4-7 by reference include the requirement of completing closure activities in accordance with the approved closure plan within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, if that date is later. Northside recognizes this regulatory requirement and has appropriately addressed this point in the closure schedule. Beginning of page 18, the final sanitary fill in Areas 4, 10 and 16, which comprise the hazardous waste disposal area occurred in June 1984. This then requires final closure by November 1984 or 180 days after approval of the

closure plan. The last closures, areas 5 and 11 are addressed on page 29. The final fill occurs in April 1988, and the proposed final closure activity is projected to be complete in October 1988. To reduce infiltration to a minimum amount, and to discourage high velocity, erosive runoff from the landfill, trash placement must continue until a slightly sloping contour with a 4% slope is developed. The 973 foot elevation of the West Portion of the East Farm Field would be sloped westward to complete the landfill. It would require 2 to 3 years to complete this landfilling operation. Site specific data such as area topography, drainage, availability of final cover, leachate control, and financial capability have also been considered in developing the plan.

In developing these plans, NSL has used a closure report, dated March 1, 1984, by Harding Lawson Associates as a guideline to this plan. HLA in turn used data supplied by NSL; Terry West, Ph.D., P.E., Geological and Engineering Consultant; previous closure and post-closure plans developed by Howard Needles Tammen & Bergendoff, dated May 15, 1981 and revised March 9, 1982; and the "NSL Part B Permit Application for Hazardous Waste Storage, Treatment and Disposal", prepared by HLA (dated July 19, 1983 and revised).

NSL also used the services of Mr. Arlie J. Ullrich, an environmental advisor consultant, for assistance in preparation of this plan.

IV CLOSURE PLAN

(Revised May 5, 1984)

A. General

Closure of the total site will occur over a period of approximately 3.8 years with both closure activity and active sanitary landfilling occuring simultaneously in separate areas on the site. This sequential closure and continued sanitary fill operation will insure an economical and environmentally sound final closure of the total site to approved elevations, contours, and slopes. In general, sequential closing of the site will consist of the following steps:

1. Notification of the commencement of closing of each section will be made to the appropriate state regulatory agency.
2. Each area will be graded and sloped as necessary to avoid low spots, ensure an average 4% top slope and contoured with the total completed closure in mind.
3. Sheet flow run-off will be provided for by working the top slope to as near a 4% grade as possible and by providing a 6" drainage layer of creek-run fill (or equivalent) below the top-soil layer. (See Schematic No. 1). A mixture of top-soil and clay may be required for the initial layment over the creek-run fill. This creek-run layer will be discontinued just at the beginning of the 3-1 final slopes, thus insuring sheet flow run-off over the final slopes. (Ref., Deficiency Report, Attachment I, ISDH, Dec. 7, 1984, Item No. 6). Northside is proposing a "creek-run fill" drainage layer to environmentally fulfill the requirements of 40 CFR 265.310 (2)

and (3) which require control of surface water infiltration and prevention of erosion. Although "slope instability" is not specifically referenced in 40 CFR 265.310, Northside suggests that a gravel layer placed on a 4% grade (2.3° slope) in no way can contribute to slope instability. This bank run sand/gravel layer has an angle of shearing resistance of 25°-30°. In fact, the drainage layer will help insure surface water run-off and help prevent infiltration. Such drainage channels are commonly designed into cover details to provide an exit path for water. A factor of safety against sliding will be well above 2. (Terzaghi and Peck, 1948).

4. The disposal areas will be capped with two feet of compacted clay-rich soils to substantially prevent infiltration of water. (CL soils, as described by the Unified Soil Classification System, will be used. See Part IV B for additional specifications). (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 9). The North Farm consists of 32 acres; clay soils borrowed from the North Farm area will be used for construction of this clay layer for closure. 15 borings have been drilled in the North Farm (see Plate 3). These borings are SB 11,38,39,40, 41,42,46,47,48,49,87,88,89,90, and 91. North Farm consists of a glacial till deposit with a maximum thickness of about 200 feet.

Boring 52, just east of the North Field, reached bedrock at 204 feet. Accounting for the variations in elevation in the North Farm which range from about elevation 890 to 930 ft., an average thickness of the clay till down to elevation 870 ft. is 40 feet. This yields a total volume for the area, not considering any set backs from the north property line, to be 40 ft x 32 acres x 43,560 ft^2/acre x 1/27 ft^3/yd^3 = approximately 2 million yd^3. Some of this soil has now been removed for cover of the existing

landfill but it is estimated that about 3/4 of it remains.

The upper soils in the North Farm consisted of approximately 7 to 10 feet of light brown silty clay (CL by Unified Soil Classification). This is a product of surface weathering of the gray till (CL-ML) which lies below it, the gray till continuing to bedrock at about elevation 710, except for a 10 foot thick sand lense from 710 to 720 ft. elevation. The brown clay will be used for the 12 inch top cover on the landfill or mixed with the sludge to yield the 6 inch thick layer of the soil-sludge layer. The borwn clay has been excavated from about half of the North Farm area at present which leaves a volume of about 7 to 10 ft. thick x 16 acres x 43,560 ft^2/acre x 1/27 ft^3/yd^3 = 250,000 yd^3 of the borwn clay remaining.

Locations of cross sections drawn through the North Farm area are supplied in Plate 4. Cross sections of interest are A-A', C-C', F-F', G-G', H-H' and I-I' which extend across the North Farm. These cross sections are found on Plates 5 and 6.

Laboratory test results for the borrow materials in the North Farm are provided in Table 1 of this report. Results are provided for borings 46 and 49 specifically in Table 1. However, the glacial till is relatively similar throughout the site so that information on borings 50,52,55-57,62-64,92,93,95 and 96 are also pertinent data. For all the applicable samples listed (for 46 through 96) the range in Percent fines (minus #200) is from 50.7 to 67.6 with a mean of 58.8%.

For the applicable samples, the natural moisture content ranges from 5.6 to 15.2% with a mean of 10.2%. In a similar fashion the liquid limit ranges from 17 to 31 with an average of 21.1%, the plasticity index from 4 to 18 with an average of

8.8%. The natural moisture content for all of the samples is well below the liquid limit of those samples (on average about 10%) and a little below the plastic limit.

Grain size distribution curves are supplied for four samples which were tested in July 1983 (see Fig. 1 and 2). These borings were made in the east field, just east of the landfill, in the Eastern Portion of the East Farm Tract, beyond the hazardous waste landfill. Soils are quite similar there to those in the North Farm. EF-2 is from Boring 93, EF-4 is from Boring 95 and the two EF-5 samples are from Boring 96. All four have a D_{10} size (diameter which has 10% finer than it) of a little less than 0.001 mm. The minus 200 percentage (fines) ranges from 55 to 65% which is similar for all the noted samples in Table 1 discussed above.

Permeability values are also shown in Table 1, Appendix A. Values for Borings 46 and 49 from the North Farm are four in number, 1.7×10^{-9}, 1.5×10^{-9}, 2.1×10^{-8}, and 5.3×10^{-9} cm/sec. Again values for Borings 46 through 96 listed in Table 1 are pertinent because they represent the same glacial till encountered in the North Farm. Values range from 2.6×10^{-7} to 1.5×10^{-9} cm/sec with a mean of 8.2×10^{-8} cm/sec.

The glacial till soils are all classified on the boring logs as silty clays to clayey siltes. They are designated as CL-ML using the Unified Soil Classification. They typically are moist, contain small rounded pebbles and have high blow counts or N values.

The cation exchange capacity of the soils is an indication of the clay mineralogy. CEC values range from 1.0 to 6.5 Meq./100 grams of sample in Table 1 with a mean of 2.2 Meq/100 grams. This is indicative of the prescence of clays which are not of a

highly expansive nature. Studies at Purdue University in which Dr. T.R. West has been involved indicate that the clay in tills of central Indiana, much like the shales from which that clay portion is derived, consist of kaolinite, illite and lesser amounts of chlorite. This is based on publications and doctoral theses, by West and others (1970), Saltzman (1975) and Deo (1972). These are based on x-ray diffraction studies of the clays.

Compaction tests on the borrow material of the North Farm field have been conducted by ATEC Associates, Inc. Results of these tests are presented in the discussion on compaction and water content of the cover material.

5. A final 6"-12" thick cover to top soil will be sloped and revegatated to prevent erosion and control runoff. The 6" layer is indicated when the top-soil is mixed with Indianapolis waste treatment sludge and disked in. (This top cover system has proved to be effective through experimental work at the Senour Road landfill. This work was done by cooperative efforts of the Indianapolis Board of Public Works, Sanitary Division, and by the Indiana State Board of Health). (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 5). See Appendix B, Summary of Belmont Sludge Land Application Demonstration. Note - if approved of use of Belmont Sludge is not obtained or if such use is not economically feasible, then Northside proposes to use top and sub-soil to a depth of approximately 12" in lieu thereof. Approximately 100,000 yds^3 of soil will be required. This will be obtained from the top 2 feet of soil in the 30 acre Boffo field located adjacent to the east of the North Field and owned by Northside. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 4). If the soil-sludge mixture is used for the vegetative layer at the top of the

landfill cap, it will be 6 inches thick. A 6 inch layer of bank run sand and gravel would lie below the soil-sludge layer. This twelve inch thickness will protect the compacted clay layer which lies below it. The top cover will be planted with endemic perennial grass species that do not have root systems that will penetrate beyond the vegetative and drainage layers.

6. Additional grading and excavation will be performed as needed at the final closure to manage runoff from the total site.

6.1 (Ref., Deficiency Report, Attachment I, ISEH, Dec. 7, 1984, Item No. 7). Northside recognizes that it is necessary to maintain and monitor a gas collection and control system if one is present in the landfill. Northside has experienced no evidence, such as vegatative stress or odors, of major gas formations and escapement. As a matter of record, Northside has explored with Lockman & Associates, Monterey Park, CA, 91754, the possibility of economically collecting gas, if present, for captive use at the landfill site. The initial part of this project, to conduct an inspection and reconnassance to develop a feasbility report, was essentially completed prior to abandament of the project due to lack of funds. If gas collection and control become necessary, then Northside proposes to execute a Gas Purchase and Lease Agreement with a typical company such as: American Gas Recovery Corporation of Maple Shade, NJ, 08052.

7. A leachate collection and treatment system will be completed and operational during the closure and will be maintained as necessary during the subsequent post-

closure period. It is anticipated that the system will provide adequate treatment to allow for discharge (NPDES permitted), and to provide for vegatative watering during the dry seasons, and for aid in sanitary fill compaction when moisture is not adequate.

8. Adequate site security will be provided during the closure period.
9. Certification of complete and final closure will be submitted to the appropriate local, State and Federal agencies.

(Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 12). General decontamination of landfill equipment such as dozers, compactors, trucks, etc., will not be necessary since any exposure and/or contamination with hazardous waste took place prior to January 25, 1983. Equipment has had routine cleaning and maintenance since that time and no additional exposure to hazardous waste is expected. However, at final closure of the last section, Northside proposes to obtain samples of dirt that may have adhered to dozer tracks, truck undercarriages, hand tools, etc. These samples will be assayed for general hazardous waste characterisitcs. If in fact, evidence of hazardous wastes is detected, then cleaning with brushes and high-pressure washers and/or steam will be utilized. The residues collected will be disposed of either on-site if permitted, or at an approved off-site disposal facility.

B. Clay Cap Construction

The cap will consist of the following:

- vegetated top cover; and

- a low permeability bottom layer consisting of CL soils (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 8). The vegetated top cover will be 6 to 12" thick and capable of independently supporting vegetation. This will effectively minimize erosion without the need for continual application of fertilizer, irrigation or other man-applied materials. The top cover will be planted with endemic perennial grass species as described in paragraph Revegetation, that do not have root systems that will penetrate beyond the vegetative and drainage layers.

The final top slope of the vegetative layer will be about 4%. The slope, in conjunction with vegetative growth will limit erosion to below 2.0 tons/acre/year.

Percolation calculations for the top vegetated soil layer are provided in Appendix F. These calculations indicate that only about 3.2 inches of precipitations should percolate annually through the top vegetated layer. All precipitation which percolates through the top soil layer should flow away through the sand layer. This layer exits in the side slopes of the landfill where it becomes runoff.

The landfill cap consists of a layer of vegetated soil (6 inches of the soil/sludge mixture or 12 inches of clay) underlain by a 6 inch bank run sand and gravel layer and finally 2 feet of compacted clay.

As shown in the attached calculation in Appendix F, only about 3.2 inches of percolation should annually penetrate the

vegetated soil layer. Calculations were performed according to US EPA's publication "Use of Water Balance Method for Predicting Leachate Generation From Solid Waste Disposal Sites". EPA/530/SW-168, October, 1975. Several pertinent pages from this report are attached in Appendix 2.

The following calculations are for percolation over a one year period. Percolation during a single, high intensity storm would not create problems. If the rain were so intense that the sand drain would become saturated, surface runoff would increase to accomodate the excess water.

The 3 foot or 3 foot, 6 inch thick soil cap over the trash will prevent frost penetration into the trash. A maximum of 33.7 inches of frost penetration is shown by the calculation above. The flexibility of the surface layer as discussed above will minimize the effects of differential settlement.

The 3 to 3-1/2 thick cover over the trash will contain the gas within the trash portion of the landfill itself. The compacted clay with a hydraulic conductivity of 10^{-7} cm/sec or less will prevent migration of the gas. Clayey soils are known to be good cover materials for the containment of gas. Using 100 lb/ft^3 as the net unit weight of the cover material, 3 feet yields a containment pressure of 300 lb/ft^2 or about 2.1 psi whereas 3.5 feet thickness yields a containment pressure of 350 lb/ft^2 or 2.4 psi. These calculations are based on $P=h\gamma$ where P is pressure in lb/ft^2, h is height in ft and γ is unit density in lb/ft^3. In addition, the six inch layer of bank run sand would carry away any gas that migrates through the 2 foot compacted clay layer. This sandy layer is connected to the side slopes and the gas could escape slowly into the atomosphere via this route.

The low permeability layer will consist of a 2 foot thick layer of recompacted clay. The function of the low permeability layer is to reject fluid transmission, causing infiltrating precipitation to exit through the vegetated top layer by evapotranspiration through the vegetated layer.

Clay soils for the cover layers will be provided from the North Farm area of the site. Additional information describing the suitability of these soils is included in Appendix A, "Subsurface Soils Investigation". Construction of the clay layer will include the following:

1. The upper layer of soil cover will be properly shaped and graded to provide a relatively smooth surface and to encourage sheet flow drainage. Following this, the soil cover will be proofrolled. Proofrolling will detect any soft spots in the cover soil which may hinder compaction of the clay cap. Soft spots will be recompacted as necessary to assure the stability of the cover. Proofrolling will be performed using a Rex landfill compactor or similar construction equipment approved by the engineer. This proofrolling should provide a relatively firm surface to receive clay cap soil.

(Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 11). Although sited regulation 40 CFR 265-112 does not specifically reference description of compaction equipment as a closure requirement, Northside recognizes for the sake of completeness, a reference to the compactor equipment may prove useful to the inspector. The Rex Trashmaster landfill compactor is designed exclusively for landfill compaction. The model 3-50A has an operating weight of over 23,000 Kg and the following compactive stress:

crushing (at cleats)	2.9 Kg/mm^2
compressing (at wheels)	8.51 Kg/mm^*

*8.51 Kg/mm is equivalent to 477 pounds/linear inch. This is a measure of landfill density application; the greater the PLI the greater the compactive power. The Rex 3-50 compactor exerts more compaction force than its leading competitors. (See Bulletin 5388-9/77, Reynard).

2. The clay for cap construction will then be placed on the sides and top of the landfill in successive 6 inch loose lifts. Areas to receive fill soils will be large enough to allow proper mobility and operation of construction equipment. Progress of the placement and compaction of the clay soils will be at such a rate to facilitate proper moisture and compaction control. Care will be taken during the construction of each lift to provide a good kneading action of the subsequent lifts. Where a lift of soil being compacted meets an existing compacted lift at the same lift level, the previously placed layer will be scarified to provide a proper joining of the clay soils. Equipment used for compaction of the clay will consist of either rubber-tired pneumatic or steelwheeled compaction equipment. Equipment currently used by the sanitary landfill operations may be used for placement and compaction operations after they are approved for use by the engineer based on demonstration of the ability of the equipment to meet the compaction requirements such that the clay cap is uniformly placed and free from voids or incompletely compacted zones.

3. Clay soils borrowed from the North Farm area will be used for construction of the clay layer. Soil samples will be collected and analyzed for moisture

density relationships, laboratory permeability, Atterberg limits and grain size distribution. The results of these tests will be correlated to determine the moisture content and density required to produce an inplace clay cap with a maximum permeability of 1×10^{-7} cm/sec. The optimum moisture content and maximum density determined in this correlation will be the standard against which field moisture and density measurements will be compared during construction of the clay cap. Moisture content and densities of the compacted in-place soils which are less than the standard will be assumed to indicate excess permeability and will fail the compaction test. All compacted soils which fail the moisture content and density test will be reworked and retested.

4. In-place density tests will be performed on the compacted clay at a rate of one (1) test per 10,000 square feet per six (6) inch compacted lift. In confined areas, one (1) in-place density test will be performed for every 100 cubic yards of clay placed.
5. The suitability of the clay soils being used in the clay construction layer will be checked every 5,000 cubic yards, or when the color, texture or characteristics change, by testing for permeability, Atterberg limits, grain size analysis, and moisture density relationship.
6. Testing and inspection of the in-place compacted clay soils will be performed by a senior engineering technician under the direct supervision of a registered professional engineer. All data generated by the senior engineering technician will be reviewed by the registered

7. The completed clay cap will be final-graded to conform to the final drainage patterns. Shaping of the cap surface will also be performed to avoid forming of any depressions that might accumulate standing water. Both activities will be performed using additional soil of necessary, and employing appropriate construction equipment, so that the final thickness of the clay cap and its integrity are not diminished.

8. Testing and inspection of the clay soils will include performing in-place density tests on the compacted soils, obtaining additional samples for laboratory testing and checking the compacted lift thickness. At the completion of the clay layer construction, a letter certifying (i.e. rendering a professional opinion concerning compliance with these criteria) the clay layer will be issued by the registered professional engineer.

9. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 3). Additional data and evaluation on the cover is presented. The waste will be and has been placed in the landfill in approximately ten foot thick layers with 6 inches daily cover. Much of the short term settlement will occur during the placement of the layer itself or during the placement of the next layer. For much of the landfill, settlement has already occurred. Northside will strive to continue a dense packing of wastes since this is clearly to his advantage. The long term settlement will be minimized by the stage construction aspect involved and the fact that much of the short and long term settlement will have occurred by the time the succeeding ten-foot lift is begun (a period of approximately 1 year).

Settlement of final clay cover will be reduced because much of the densification of the waste will occur prior to the placement of that cover. The total three foot to three foot 6 inch thick cover of clay, bank (creek) run sand and gravel and plant supporting materials should be sufficiently flexible to adjust to any long term settlement that might occur.

The clay cover will not be subject to liquification or to significant soil creep. The compacted density of the cover and the fact that it is not prone to liquification will preclude such occurrence. The cover material will have a high shear strength and will not be subject to such aspects.

Some reduction in volume will take place due to natural biochemical reactions in the buried waste. Prevention of accumulation of liquids with the waste is accomplished by the sand drain in the liner. The reduction that occurs can be accomodated by the clay liner because of its plasticity, compacted density and shear strength. No differential settling is anticipated.

A skematic drawing showing the details of the cover design is provided in Schematic No. 1.

The current discussion concerns the depth of frost penetration at the site and the effects of freeze/thaw cycles on the cover. As described previously, the cover will be clayey silt to silty clay in nature. It will be compacted to a dry unit weight of about 100 pcf and its optimum moisture content will be about 15 percent. The following calculations are based on details on frost heave and frost penetration, Chapter 5, of the reference text, "Principles of Pavement Design", by E.J. Yoder and M.E. Witczak, John Wiley and Sons, Inc., pp. 177-194.

Whitestown, Indiana is located about 4-1/2 miles to the southwest

of the Northside Sanitary Landfill site. The climatological summary for Whitestown is included in Appendix E. These data are for the 30 year period 1931 to 1960.

Based on the mean monthly temperature data provided for the Whitestown climatological station, 129 degree days occur in the average year for this location. Also, the mean annual temperature is 51.9°F. Using a duration of freezing of 80 days the following calculations are made based on equations from Yoder and Witiczak: (See Equations - following page)

C_v and C_f are the heat capacities of the unfrozen and frozen soil respectively.

In addition, the maximum frost penetration for the ground in central Indiana used for footing protection and for other structures is 30 inches.

The effects of freezing and thawing cycles and frost penetration is the weakening of the soil strength during the thawing period. During the time of spring thaw and in other thawing periods, heavy machinery will not be allowed to travel over the soil cap. Freeze cycles also have the effect of loosening the soil, increasing the permeability, and decreasing the soil's density. This only occurs near the upper surface where the soil is not confined.

C. Drainage Plan

The site drainage plan is intended to accomplish efficient removal of surface run-off from the landfill site and to prevent runon of surface water from upslope areas. This drainage plan does not attempt to correct any present or future off-site drainage or flooding problems which are attributable to conditions beyond the control of NSL.

EQUATIONS

L = Latent heat of fusion of the soil (involved when soil thaws or freezes).

k = Thermal conductivity of the soil given that γ_d = 100 lb/ft^3, ω or moisture content = 15 percent, F = degree days = 129

$$C_v = \gamma_d \left(0.17 + \frac{\omega\ (1.0))}{100}\right) = 100\ (0.17 + 0.15) = 32.0$$

$$C_f = \gamma_d \left(0.17 + \frac{\omega\ (0.5))}{100}\right) = 100\ (0.17 + 0.075) = 24.5$$

$$L = 1.43\ \omega\gamma_d = 1.43\ (.15)\ (100) = 2150$$

$$k_v = \frac{8.5}{12} = 0.706 \quad k_f = \frac{10}{12} = 0.833 \text{ (per chart in ref. text)}$$

$$k_{avg} = \frac{k_v + k_f}{2} = \frac{0.0705 + 0.833}{2} = 0.769$$

No. = 2.88 M = 0.0821 (per chart in text)

λ = 0.69 based on plot of No. vsM (chart in text)

$$Z = \lambda\ \frac{48kF}{L} = 0.69\ \frac{48\ (.769)\ (129)}{2150} = 1.026 \text{ ft} = 12.3 \text{ inches}$$

Using the coldest temperatures for months in the 30 year period yields 840 degree days. In this case

$$Z = 0.74\ \frac{48\ (.769)\ (840)}{2150} = 2.8 \text{ /ft.} = 33.7 \text{ inches}$$

On-site drainage of rainfall occurs primarily as sheet flow across the surface of the site. This general pattern for rainfall runoff was selected because it presents the least opportunity for erosion of the final cover soil, once revegetation has been established.

Sheet flow run-off will collect in drainage ditches provided along the north and wast sides of the west portion of the East Farm Tract. Ditches will be sloped to drain to the southeast corner of this portion of the site. Ditches are designed to minimize maintenance and erosion.

The location of the drainage ditches is shown on Plate 2. These drainage ditches will be constructed or reconstructed and provided with erosion protection systems as necessary during the closure activities. Slopes and cross-sectional areas of these drainage ditches will be adequate to provide drainage of the areas. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 15). These drainage ditches will completely encompass the landfill collecting all water which runs off the completed landfill as runoff. For the hazardous waste section, the West Portion of the East Farm Tract, the ditch begins on the north side of the landfill at the zero east-west line running eastward until line 500E where it turns southward running along the east end of the landfill ending up in a low area in the southeast corner. On the south side of the landfill the ditch also begins at the zero east-west line and runs north eastward until it reaches the same low area in the southeast corner about line 500E.

For the West Farm area, the non hazardous waste site, the ditch begins on the north side of the landfill just west of the zero

east-west line and runs westward until the 1500W line where the ditch intersects the Unnamed ditch. Runoff from the western boundary of the landfill will drain directly into the Unnamed Ditch or into Finley Creek. For the south side, the ditch begins just west of the zero east-west line and runs westward along the southern boundary until about 1400W where it flows into Finley Creek.

The northern leg of east flowing ditch will drain about one half of the west portion of the East Farm Field or about 5.5 acres. The south ditch and the ditch along the east end of the landfill will also drain about 5.5 acres.

The drainage ditch from the zero East-West line running westward to the Unnamed Ditch will drain about 1/3 of the West Farm Field landfill or 40/3 = 13.3 acres along with draining about 1/2 of the north field or nearly 16 acres more.

About 1/3 of the area of the West Farm Field Landfill or 13.3 acres will drain directly into the Unnamed Ditch by flowing westward. The remaining 13.3 acres of the landfill will drain southward into the ditch running from zero east to 1400 west where it drains into the Unnamed Ditch.

The rainfall for a 6 hour duration period for central Indiana with a 25 year frequency is indicated to be 3.6 inches (Burke, C.B., 1981, County Storm Manual, Highway Extension and Research Project for Indiana Counties, Purdue University, West Lafayette, IN). This yields an average hourly rainfall of 0.6 inches. This is the most critical time, 6 hours, relative to runoff as ground saturation has occurred during this time and maximum runoff occurs.

However, data for the 24 hour duration of the 25 year frequency storm was requested by US EPA for this analysis.

Conversion procedures (Burke, 1981) yield a 24 hour duration of the 25 year storm to be 4.79 inches of 0.10 inches per hour.

Runoff is calculated by Q=ciA where Q is the quantity of runoff, c = runoff coefficient, less than 1 related to the land surface, i is the rainfall intensity and A is the area over which the rain falls. For the landfill a high value for c would be appropriate, 0.9 and for the North Farm 0.73, a moderate value.

For the north and the south legs of the east field drainage

$Q = ciA = 0.9\ (0.2\ in/hr)\ 5.5 = 0.99$ acre-inches/hr

$= 0.0825$ acre ft/hr $= 3593.7\ ft^3/hr$

$= 0.998\ ft^3/sec$

For the south leg of the west field drainage

$Q = ciA = 0.9\ (0.2\ in/hr)\ 13.3 = 2.41\ ft^3/sec$

For the north leg of the west field drainage

$Q = 2.41 + 0.73\ (0.2\ in/hr) \times 1/12 \times 43560 \times 1/3600$

$= 2.41 + 2.36 = 4.77\ ft^3/sec$

Because the 6 hour duration storm is more critical these values are multiplied by 0.6/0.2 or 3X yielding Q east legs = $0.998 \times 3 = 2.99$ cfs

Q south, west leg $= 2.41 \times 3 = 7.23$ cfs

Q north, west lef $= 4.77 \times 3 = 14.31$ cfs

The next step is to calculate the velocity of flow in the ditches which is accomplished using the Manning Equation

$$v = 1.49/n\ R^{2/3}\ (S)^{1/2}$$

where v is velocity in ft/sec, n is the roughness of the bed, s is the slope or gradient as a dimensionless number and R is the hydraulic radius.

The slope is 1% on all ditches at NSLF or 0.01, the ditches are 5 feet wide and 2 feet deep and n for a grassy, open channel

is 0.022. R equals 5x2/5+2(2) = 1.11

$$v = 1.49/0.022(.01)^{1/2}\ 1.11^{2/3} = 7.25 \text{ ft/sec}$$

At a velocity of 7.25 ft/sec the 10 foot cross section can carry 10(7.25) = 72.5 cfs which is several times greater than the runoff values needed.

Therefore ditches 5 feet wide with 2 foot high sides will carry the runoff from the 25 year frequency storm.

Care will be taken to prevent erosion in the drainage swales and ditches on and adjacent to the site by revegetation. It is recognized that until ample vegetation has been established both on the site and in the ditches, soil erosion can occur in both locations, and sediment deposits can collect in the ditches. If this occurs either during closure or during post-closure, necessary corrective action, such as regrading or ditch cleaning, will be taken.

Should it become apparent that routine maintenance of the drainage system is not enough to prevent erosion, additional protection will be provided. Suitable materials for protecting the soil and preventing erosion will be installed.

D. Leachate Collection and Treatment (Plate 2)

A 4" schedule 40, perforated PVC pipe located within a gravel tench, and three (3) 1000 gallon fiberglass collection tanks has previously been installed as part of a leachate collection system. This collection system begins at approximately 100 W grid and runs west along the south edge of the west fill area (Old Farm). This section of the system terminates in a 1000 gallon collection tank (No. 2) located at the SW corner of the landfill. A second perforated PVC pipe system originates at the NW edge of the west field at grid 400 S. and runs directly North and South along the west edge of the landfill.

This line will terminate in a 1000 gallon collection tank (No. 3) located at the 800 S grid, and in a 1000 gallon collection tank (No. 1) located at the 50 S grid. A third part of the collection system will be a modification of the current SW collection systems. A final short 4" PVC line will begin at grid 800 S (just S of tank No. 3) and run south along the west edge of the fill, terminating in the 1000 gallon collection tank (No. 2). (Ref., Deficiency Report, Attachment I, 1984, Dec. 7, 1984, Item No. 14). A water balance calculation, discussed previously is included in Appendix F. This work shows that an infiltration of 3.2 inches per year through the vegetative cover is indicated by this calculation. It is likely that much of this infiltration will be removed by the bank run sandy zone and hence will not move into the trash. The 3.2 inches of infiltration is, however, an indication of the worst case situation.

After the landfill has become fully saturated, every volume of water tha infiltrates through the cover will have to eventually come out at the landfill boundaries, and presumably be removed by the leachate collection system. Because of the high porosity of the trash, it may take many years for the landfill to reach field capacity (complete saturation).

The West Farm Tract, the non hazardous part of the landfill, has an area of about 40 acres. As the West Portion of the East Farm Tract is not connected hydraulically to the West Farm Tract it is not included in the 40 acres. The higher groundwater mound in the West Farm Tract and the clay barrier between the two tracts prevents movement of the leachate from east to west.

3.2 inches of infiltration per year over the 40 acre West Farm Tract yields 10.67 acre feet of water. As one acre foot is

43,560 ft^3 this yields 464,600 ft^3 or 3,475,000 gallons/yr. The leachate collection system consists of three, 1000 gallon collection tanks plus a collection pipe within a rock filled trench. The capacity of the total system is about 30,000 gallons. If 30,000 gallons is removed when the system fills, it would need to be emptied 116 times per year or every 3.2 days.

This answer of every 3.2 days suggests an extremely high frequency for emptying the leachate system; a frequency which most likely is unrealistically high. Firstly, the bank run sandy zone will intercept much of this infiltrated water and carry it away to the side slopes. One inch per year of infiltration into the trash is a more likely maximum, yielding 1,086,000 gal. and requiring the system to be emptied 36.6 times per year times or every 10.1 days.

Estimating infiltration through the clay cap of a landfill is inexact at best. The method used is based on infiltration through natural soils, not compacted clay fills and the infiltration rate may be well below the 3.2 inches of infiltration calculated in the water balance procedure. The U.S. Geological Survey, in Indianapolis has proposed a study involving precipitation, infiltration and runoff for the Northside Sanitary Landfill. Funding limitations prevented this study from being initiated (K. Banasack, U.S. Geological Survey, personal communication, 1984). In addition, many leachate collection systems for landfills are known to collect very small amounts of leachate. Also, when the leachate moves through clay soils cation exchange takes place and the leachate is cleaned up.

After closure, monitoring of the level of leachate in the leachate collection system will be performed once per week until it is established how much leachate will accumulate in the

leachate system as time goes by. The system will be emptied when it fills up to the stand pipes in the leachate tranks. It is anticipated that monitoring results of the leachate levels will soon establish that quarterly monitoring with possible leachate removal at that time will prove to be what is necessary on the site.

It is also anticipated that a sampling program may be developed during the lifetime of the leachate collection which may demonstrate that certain portions of the landfill do not generate a "hazardous leachate" and in fact may be used for discharge dilution water or returned to the landfill during dry weather. However, the immediate plan is to pump all three (3) tanks to an aerated holding pond which will then be considered as headwater for the leachate treatment system.

Since the east portion (east of a N-S line from 270 ft. E of the 400 E grid) of the East field may not be land-filled, there is no immediate plans for extending the leachate collection to include that area.

(Ref. Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 13). Northside recognizes that under the regulatory authority of 40 CFR 264.112 (a), an approved closure plan which would include any method of leachate treatment, would be required. However, since Northside is closing under the regulatory authority of Indiana 320 IAC 4-7 and 40 CFR 265 by reference, a change in interim status, as provided for in Par. 270.72, will be requested to include a leachate process system if approved.

A non-biological leachate treatment system is proposed which will provide adequate treatment to allow a permitted NPDES discharge under Indiana Regulation 330 IAC 5. Generally, this treatment system will consist of a primary aeration tank with adequate air mixing and detention time to air strip minimal amounts of volatiles (ammonia and/or solvent) and to provide adequate mixing to prevent heavy settling of suspended

hazardous waste sections which received wastes during the Interim States period.

a. In trust - Farmer's State Bank, Zionsville, IN (as of Dec. 31, 1984)....$45,412.00 (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 24)

By October 1988 @ 8-1/2% interest = $62,390.00

b. $72,000 is required (30 x $2400.00) for hazardous waste post-closure

c. $12,000.00 - $2400.00 = $9600.00 required for yearly closure cost for balance of landfill. This amount will be generated by investing a principle amount of $113,800 at 8% interest for 30 years. This amount will also be accumulated in the trust fund to be available at the beginning of post-closure period.

d. Therefore: The following total funds will be required by October 1988:

- Final closure	$55,000.00
- Hazardous Waste Section..	72,000.00
- Balance: post-closure	113,800.00
Sub-total	240,800.00
less (in trust)	62,390.00
Total	$178,410.00

e. This amount $178,410.00 will be accumulated in trust by a deposit of $10,900.00 quarterly at an interest rate not below 8% compounded monthly, beginning March 1, 1985.

C. Deed Restrictions and Notices

The requirements of 40 CFR 265.119, notice to local land authority, and 50 CFR 265.120, notice in deed to property will be met by the Owners of "SL within the required time periods.

1. Deed Restrictions

In accordance with the laws of the State of Indiana, a

NOTE: Page No. 42 was inadvertantly left out of the original copy of this plan. It was later supplied by messenger to the ISBH. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 25). This deficiency references Par. 264.310 (b). Northside recognizes this as intending to reference 265.310 (b), and as such has covered such requirements in the following paragraphs; D. Inspection and E. Maintenance.

D. Inspections

Inspections and a record thereof, will be performed monthly throughout the first year of post-closure maintenance, then annually for the remainder of the post-closure care period. Yearly inspections will be performed in the spring as damage will most likely occur during the winter. Monthly inspections will be performed by NSL employees and annual inspections will be performed by a registered professional engineer.

During these inspections, the surveyed bench marks, warning signs, soil cover, vegetative cover, drainage facilities and monitoring wells will be inspected. The site will also be inspected for evidence of erosion, severe surface cracking, ponding, slumping, inadequate slopes, damaged vegetation, leachate escape, or similar problems. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 16). Northside recognizes that the following post-closure inspection concerns may be repetitious and further referenced in Par. E, following. However, for the sake of clarity

and possibly considered under the reader's concepts of 40 CFR 265-117 (2)(c)..."must never be allowed to disturb the integrity of the final cover,..."; the following additional points are included:

a) If during an inspection, deep-rooted vegetation which may penetrate the clay cover is noted, it will be treated with a systemic plant herbicide such as 2,4,D for control.

b) If evidence of burrowing animals is noted, the soil will be re-compacted generally by hand, and attempts made to remove the animals by trapping.

c) Inspection made after a major storm will include providing erosion and surface cracking problems which may develop.

d) During any inspection, bare spots (lack of vegetation) will be noted and properly scarified and re-seeded at the appropriate time.

e) Differential settlement will be noted and renovated as necessary, generally by topsoil addition, levelling and re-seeding.

E. Maintenance

The following maintenance activities will be performed during each inspection for the post-closure maintenance period.

The surveyed bench marks will be inspected for any damage or deterioration and kept clear of vegetation and debris. Any damaged bench marks will be repaired or replaced as necessary.

Warning signs surrounding the site will be inspected and maintained or replaced as necessary to prevent unknowing entry of unauthorized personnel.

The soil cover over the closed site will be inspected for any signs of erosion, burrowing rodent activity, slumping or depressions caused by secondary consolidation. Any damaged or eroded areas will be renovated as necessary. Appropriate control measures will be carried out if any burrowing rodents have disturbed the site, in order to prevent physical damage to the soil cover. Appropriate control measures will be taken as needed to prevent the growth of woody or deep-rooted plants whose roots may penetrate and thus damage the soil cover.

The vegetative cover will be observed, and revegetation will be undertaken if necessary. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 17). Vegetative cover will be particularily observed by walk and drive-over inspections during the growing seasons. The application of 12-12-12 granular or equivalent liquid fertilizer will be applied in early spring if necessary to maintain viable cover growth. Post-closure sprinkling on the established cover will generally not be required. However, if extreme soil dryness is noted, then sprinkling by use of the hydroseeder truck and/or portable sprinklers will be done.

All monitoring wells will be maintained so as to provide uninterrupted sampling of groundwater. Wells that are damaged but are salvagable (e.g. casing damaged by equipment) will be repaired immediately upon detection. For more severly damaged wells which can not be repaired, NSL will immediately notify the Indiana Board of Health of such an occurrence and will coordinate all new well installation with the State and/or EPA. NSL will employ the services of a qualified geotechnical field consultant to certify the placement of the well, to provide field consultation and management of a drilling crew, and to log the boring. All new wells will be properly screened, developed, sampled and analyzed prior to placement into monitoring service.

All drainage systems will be observed for evidence of physical damage, deterioration, siltation or erosion, and necessary corrective action will be taken.

F. Groundwater Monitoring

At least one upgradient and three downgradient monitoring wells will be sampled on a semi-annual basis during post-closure. (MW6, MW5, MW4, MW3) Water levels will also be measured at this time. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 19 & 20). Seven monitoring wells have been established and their location is shown on Plate 3.

Logs of the monitoring wells are included with the boring logs in Appendix A. The graphic logs of the monitoring wells are shown on the cross sections supplied on Plates 4, 5, 6 and 7. Several cross sections in perpendicular directions are included

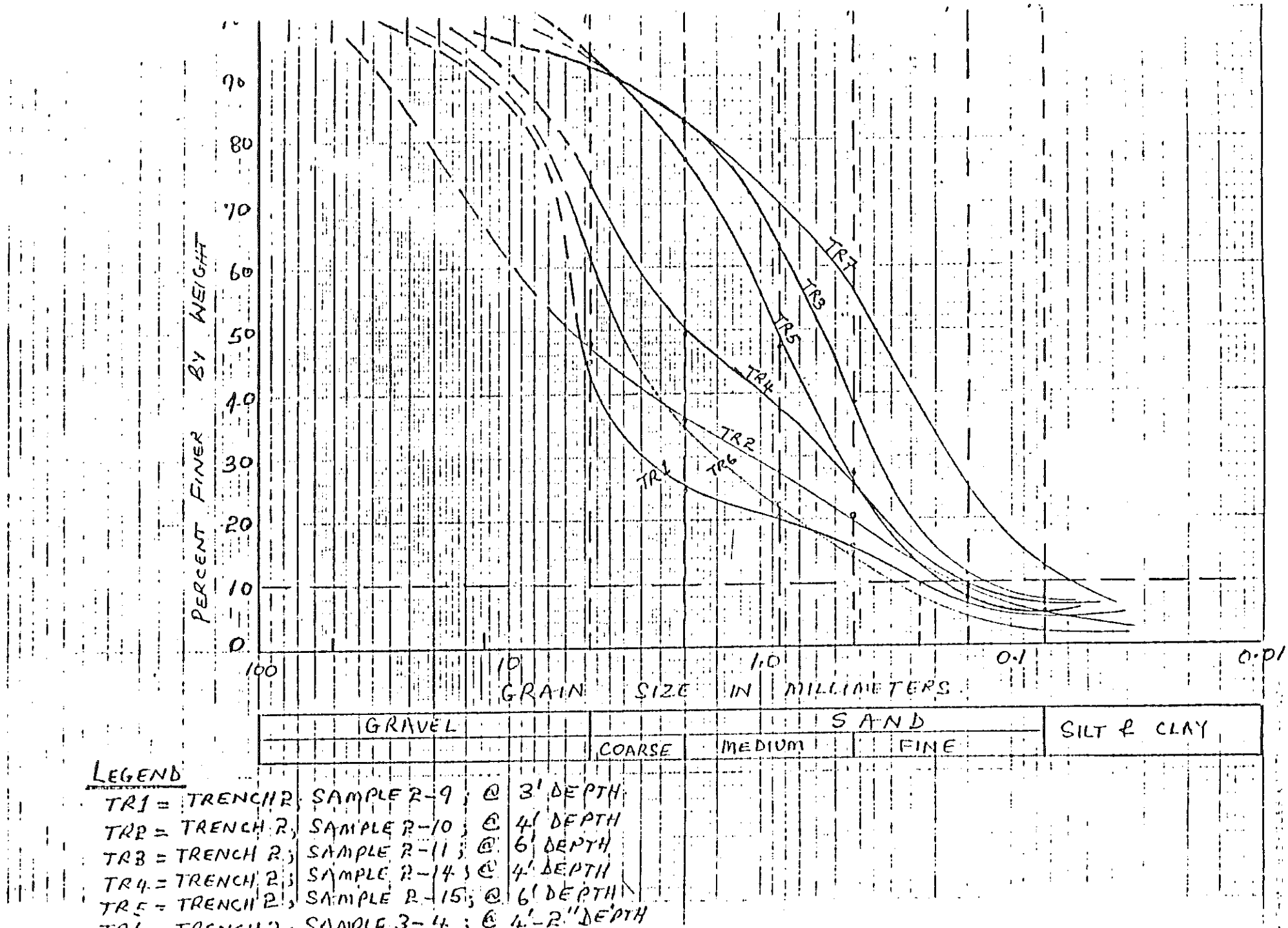
in these figures.

MW-1 is located in the unconsolidated surface aquifer along the Unnamed Ditch. Sand samples were taken in trenches adjacent to MW-1 in August 1982. Grain size analyses were determined on these samples and permeabilities were calculated based on Hazen's Approximation. See Figrues 3 and 4. The permeability or hydraulic conductivity averages 3.45×10^{-2} cm/sec. MW-1 through 8 are in glacial till with thin layers of sand within the till serving as the confined aquifer. These monitoring wells were drilled in 1979 with one replacement well drilled in 1981 using the rotary method with "off-auger" sampling. No samples were retained by the well driller. Split spoon borings in the glacial till taken in adjacent areas to the monitoring wells indicate that the till is a gray, silty clay-clayey silt (CL-ML) with some small pebbles present. The water bearing sand lenses are gray fine sands and silty sands. In-hole pump tests were performed in borings in the fall 1983 in similar sandy materials in the east and north fields. Values ranged from 7.4×10^{-4} to 3.5×10^{-6} cm/sec with an average of 3.8×10^{-4} cm/sec.

Well construction information is available on the logs of the monitoring wells. See Appendix G. These wells were drilled in 1979. Completion diagrams or as-built diagrams of the wells are provided in Appendix H based on this information. The wells were typically drilled past the water bearing zone and subsequently backfilled with well cuttings. Then the screen was set at the water bearing zone. Sand was packed around the screen and backfilling to the surface with clay cuttings was accomplished. Locked caps have now been placed over the casings.

No migration of hazardous waste constituents are indicated in the West Portion of the East Field Tract. Four quarterly samples have been taken from the 3rd quarter 1982, through the 2nd quarter 1983. Additional samples as late as Dec. 1984 have also been taken. These provide the background for comparison to future results obtained on the monitoring wells. These will be monitored on a semi-annual basis following closure of the West Portion of the East Field Tract. Evaluation using the Student's T Test will be accomplished on these data.

Groundwater flow maps for the east portion and west portion of the existing landfill site are enclosed in Appendix I. These maps are for three different times, Nov. 15, 1982, February 3, 1983 and April 20, 1983. The results are quite similar in their detail for these three dates. All groundwater samples will be transported to a contract laboratory and analyzed for all parameters identified in 40 CFR 265, Subpart F, and as specified by the Indiana Board of Health.



LEGEND

TR1 = TRENCH 2, SAMPLE 2-9 ; @ 3' DEPTH
TR2 = TRENCH 2, SAMPLE 2-10 ; @ 4' DEPTH
TR3 = TRENCH 2, SAMPLE 2-11 ; @ 6' DEPTH
TR4 = TRENCH 2, SAMPLE 2-14 ; @ 4' DEPTH
TR5 = TRENCH 2, SAMPLE 2-15 ; @ 6' DEPTH
TR6 = TRENCH 3, SAMPLE 3-4 ; @ 4'-2" DEPTH
TR7 = TRENCH 3, SAMPLE 3-5 ; @ 6'-3" DEPTH

FIG 3

GRAIN SIZE ANALYSIS TRENCH SAMPLES

FIGURE 4

PERMEABILITIES, TRENCH SAMPLES

SAMPLE DESIGNATION	D_{10} VALUE (mm)	D_{10} cm	*$k = 100 D_{10}$ cm
TR1 = TRENCH 2, SAMPLE 2-9 @ 3' DEPTH	0.23	0.023	$5.29 \times 10^{-}$
TR 2 = TRENCH 2, SAMPLE 2-10 @ 4' DEPTH	0.17	0.017	$2.89 \times 10^{-}$
TR 3 = TRENCH 2; SAMPLE 2-11 @ 6' DEPTH	0.13	0.013	$1.69 \times 10^{-}$
TR4 = TRENCH 2; SAMPLE 2-14 @ 4' DEPTH	0.155	0.0155	$1.33 \times 10^{-}$
TR5 = TRENCH 2; SAMPLE 2-15 @ 6' DEPTH	0.19	0.019	3.61×10^{-2}
TR 6 = TRENCH 2; SAMPLE 3-4 @ 4'-2" DEPTH	0.30	0.030	9×10^{-2}
TR 7 = TRENCH 2; SAMPLE 3-5 @ 6'-3" DEPTH	0.06	0.006	0.36×10^{-2}

Avg 3.45×10^{-2} cm/sec

* Based on Hazens Approximation

T. R. West
11/1/82

All sampling and testing procedures will be performed in accordance with the appropriate regulations and standards in effect at the time of sampling. Test results will be reported to the appropriate state and federal regulatory agencies.

If the monitoring results show a significant variance from previous results, additional samples will be collected and tested. If a significant variance is confirmed, the appropriate regulatory agencies will be informed and a specific environmental assessment plan developed. Upon completion of the assessment, the results will be analyzed and additional plans or corrective measure will be developed, as needed. (Ref., Deficiency Report, Attachment I, ISBH, Dec. 7, 1984, Item No. 18). The statement has been made by US EPA that there is evidence that Northside Sanitary Landfill (NSL) is contaminating the groundwater and potentially the surface water in the area. It is the conclusion of NSL that this is not the case but instead, strong evidence exists identifying the Envirochem Corporation site as the source of such contamination. This conclusion by NSL was reached after a lengthy, detailed study of the site by Dr. T.R. West (see reports, West, Sept. 1982, West, Sept. 30, 1982 and West, January 26, 1983). A brief summary of this extensive evaluation is provided in the following discussion.

There are seven groundwater monitoring wells on the Northside Sanitary Landfill site (see Plate 3). MW-6 and MW-7 are upgradient of the landfill and MW-1,2,3,4 and 5 are down gradient. Contamination has occurred only in MW-1 which lies within the sandy, unconfined, surface aquifer situated along the Unnamed Ditch at the Southwestern part of the landfill. This sandy aquifer extends southward from the access road of the landfill, along the Unnamed Ditch, continuing to Finley Creek. It is about 25 feet thick at

its deepest point, feathering out to zero at the edges and is about 400 feet wide. Glacial till lies below it and laterally against it on its edges. The nature and extend of this sandy unit was determined by Dr. West through a series of trenches and borings made in this area during the summer and fall, 1982.

MW-1 is located about 80 feet west from the previous edge of the trash at the southwest corner of the landfill. This trash was shoved back about 100 feet to the east in February, 1983 so that MW-1 is now about 180 feet west of the current toe of the landfill slope. MW-1 is also located about 200 feet south of the drum storage area of Envirochem Corporation (ECC).

Elevated levels of chloride, sodium and other inorganic ions were noted in MW-1 in 1981. Also in 1981 and 1982 elevated concentrations of some volatile organics, (trichloroethane, etc.) were discovered in MW-1. In July 1983, the Indiana State Board of Health tests for MW-1C showed 190 ppb of 1,1,-dichlorethane, 190 ppb of Trans 1.2-dichloroethane, and 12 ppb trichlorethylene. MW-1C is about 50 feet northeast of MW-1.

In October 1982 chemical analyses were performed on water lying on the drum storage pad of Envirochem Corporation while thousands of drums of wastes were being stored there. Analyses were also made of water and soil in the ditch which flows just to the south of the storage pad and enters into the Unnamed Ditch just upstream from MW-1 and MW-1C. These tests showed thousands of parts per billion of the same volatile organics which have appeared in MW-1 and MW-1C. These facts strongly suggest that water containing high levels of volatile organics had flowed from the Environchem Site, reached the Unnamed Ditch and gone underground in the sandy aquifer to reach MW-1 and

MW-1C. In addition, the Indiana State Board of Health had established prior to this time that water from the cooling pond on the ECC site had entered a sandy zone below the site. Dr. West's studies have shown that there is a strong liklihood that this sandy zone intersects the surface unconfined aquifer south of the access road along the Unnamed Ditch. This is another means whereby volatile organics reached MW-1 and MW-1C from the ECC site.

To explore for the presence of volatile organics in the southwestern portion of the landfill a trench was excavated through the trash about 100 feet east of MW-1, in September 1982. This work was supervised by Dr. West. Analysis of water samples taken from the sandy soil below the landfill was accomplished. A value of 60 ppb of 1,1-dichloroethane was the only indication of volatile organics in the leachate below the landfill. On the basis of this it was concluded that the volatile organics in MW-1 and MW-1C are coming from the ECC site and not the landfill.

Based on this work it was concluded by Dr. West that the inorganic ions in MW-1 were coming from the landfill but the volatile organics were coming from the Envirochem Site. The Indiana State Board of Health (Bruns and Schmidt, 1984 and Schmidt, 1983) have indicated that it cannot be determined whether the source of volatile organics is the Envirochem Site or Northside Sanitary Landfill. A similar conclusion was indicated in the US EPA report on the Envirochem Site by Ch_2M-Hill in which the ECC Site was indicated as the likely source of these contaminants (Aug. 22, 1983).

In February 1983 the trash was moved 100 feet further east from the area of the southwest corner of the landfill. In this

area the trash had been in contact with the sandy, unconfined surface aquifer. The input of inorganic ions to the MW-1 area should be eliminated by this action.

In the summer 1984 clean up of the Envirochem Site was completed. The drums were removed, the cooling pond drained and all contaminants eliminated from the site. As the trash has been moved from the sandy zone of NSL and the ECC site cleaned up, the sources of contamination of the MW-1 area have apparently been neutralized.

The groundwater quality assessment plan calls for the continuation of monitoring the water quality of MW-1 and MW-1C. The Indiana State Board of Health has obtained water samples recently for analysis of the priority pollutants on MW-1. Results of these tests will provide information on the rate at which improvement of water quality in the MW-1 area is continuing.

A trench and a soil boring were made at the southern boundary of the landfill property along the Unnamed Ditch in the fall 1982 (Trench 4 and SPB 80). Water quality tests on both of these indicated that contaminated ground water is not leaving the NSL site.

It needs to be pointed out that as the West Portion of the East Farm Tract is the hazardous waste landfill which is subject to closure, and is not related to the West Farm Tract, that the condition of MW-1 should not be at issue here. Only when the West Farm closes in two to three years will this become involved in the closure procedure. Monitoring of water quality in the MW-1 and MW-1C area in the next year will indicate what measures need be taken, if any, regarding this area.

A remedial action plan does exist to alleviate contamination to MW-1 if it is found to come from the landfill. A sandy zone

about 100 feet wide at the access road still appears to connect the landfill with the unconfined surface aquifer surrounding MW-1. Thickness of this sandy zone appears to be about ten feet with glacial till (clay) located below it. Excavation and backfilling with a compacted clay cutoff wall or a slurry wall trench across this section are possible alternatives. These will be persued only if contamination persists at MW-1. There have been sufficient remedial measures taken, however, removing the trash from the southwest corner of the landfill and the clean up of ECC, that water quality should improve with time and monitoring for at least one year more before taking futher action is in order.

G. Response Plan for Post-Closure

In the unlikely event that leachate escapes the leachate control systems, the leachate will be managed so as to prevent its escape into nearby receiving streams. If leachate is noticed during the post-closure period inspections, it will be pumped tothe leachate collection systems. At the same time, a berm will be built uphill of the leachate to prevent introduction of surface run-off. The area where leachate is discharging will be enlarged to enhance drainage of the leachate into the collection system. When the leachate ceases, the enlarged drainage area will be sealed with clay and the area will be regraded back to its original slope and re-seeded.

H. Record Keeping and Reporting

NSL will maintain a record of each inspection made of the closed site during the post-closure maintenance period. These records will indicate the person who performed the inspection and the date the inspection was made. The records will also indicate whether any deficiencies or problems were observed during the inspection of the site and will further indicate

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

November 23, 1992

CS-3T

Martha Rhoades
Trust Officer
National City Bank, Indiana
P. O. Box 5031
Indianapolis, Indiana 46255

RE: T/A Northside Sanitary Landfill, #10-6191-000

Dear Ms. Rhoades:

On behalf of the Regional Administrator, Region 5, United States Environmental Protection Agency, and pursuant to Section 14 of the above Trust Agreement, I request that you provide to U.S. EPA, as beneficiary of the above Trust, a sworn statement indicating:

1) The date of the last contribution to the Trust by the Grantor;
2) The current valuation of the Fund; and
3) Whether or not any contribution to the Trust has been made since September 9, 1992, and, if so, the date(s) and amount(s) of such contribution(s).

Please repond directly to me at mail code CS-3T. If you have any questions, please call me at (312)353-7447. Thank you in advance for your prompt cooperation.

Sincerely yours,

John H. Tielsch

John H. Tielsch
Assistant Regional Counsel

cc: Hak K. Cho, RCRA Permitting Branch
Harry John Watson III, Indiana Attorney General's Office
Barbara Rogers, Department of Justice

MID STATE BANK
P.O. BOX 70, LEBANON, IN 46052

July 17, 1989

EPA Regional Administrator
230 S. Dearborn St.
Chicago, IL 60606

Gentlemen:

As Trustee for the Closure and Post-Closure Fund for the Northside Sanitary Landfill, I must notify you that the annual contribution has not been made. This notice is sent in compliance with Section 15 of the Trust Agreement.

If there are any questions, please feel free to contact me.

Sincerely,

MID-STATE BANK

Robert A. Duff
Senior Vice President
and Trust Officer

cc: John Bankert

RH

MID STATE BANK

P.O. BOX 70, LEBANON, INDIANA 46052

JUN 10 2 05 PM '87
OFFICE OF SOLID AND HAZARDOUS WASTE MGMT DEM

ANNUAL VALUATION

Northside Sanitary Landfill

6-1-86 - 5-31-87

Beginning Balance	$49,424.79
Interest Earned 6-1-86 - 12-31-86	1,428.31
5-19-87 Bagley, Hoage and Harrison (Preparation of 1986 Fudiciary Tax Returns)	- 200.00
Interest Earned to Date in 1986	1,277.81
No Annual Payment Received in 1986	
Ending Balance	51,930.91

Currently invested in MMDA #93-00-2109 at Mid State Bank

MID STATE BANK
Zionsvile, IN 46077

Joyce Cunningham
Assistant Trust Officer

JC:rw

This is to certify that I have received the above Report this

_____ day of _____.

_____
Authorized Signature

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

June 4, 1992 CS-3T

John Kyle
Barnes & Thornburg
1313 Merchnts Bank Building
11 South Meridian Street
Indianapolis, Indiana 46204

Re: Northside Sanitary Landfill

Dear John:

Enclosed is a copy of a letter we received from Northside Sanitary Landfill requesting the release of RCRA closure trust fund monies to Northside to be applied to leachate collection and cover at the landfill. Please review this request with the Northside Remediation Committee's technical people and let Karen Vendl and me know whether such actions pose a problem for the ongoing remedial design and remedial action.

You have advised me that the Northside Remediation Committee has filed suit against the Bankerts regarding their current landfilling activities which may be interfering with RD/RA at both Northside and Envirochem. Please provide me a copy of your complaint and any attachments.

U.S. EPA is evaluating Northside's request for release of the trust fund account with the Indiana Department of Environmental Management. Please raise any concerns you have with the Northside proposal as it impacts RD/RA as quickly as possible.

Sincerely yours,

John H. Tielsch

John H. Tielsch
Assistant Regional Counsel

cc: Karen Vendl, EPA
Barbara Rogers, DOJ
Jeff Stevens, IDEM
Jonathan Adenuga, EPA

cc: ORC
PMD
WMD
BECK
RA RF

KUNZ AND KUNZ

LAWYERS

WILLIS K. KUNZ
HALBERT W. KUNZ
DONALD L. BECKERICH
WILLIAM A. WADDICK
THOMAS L. MATTIX
S. GREGORY ZUBEK
KATHRYN M. KUNZ
ALLISON D. WHARRY

320 N. MERIDIAN STREET
INDIANAPOLIS, INDIANA 46204

AREA CODE 317
262-1111

FAX NO. (317) 262-1132

May 19, 1992

Mr. Valdas V. Adamkus
Regional Administrator
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, Illinois 60604

RE: Trust Agreement
Northside Sanitary Landfill, Inc. and
Farmers State Bank of Zionsville,
Incorporated
Our File: N33(33)

Dear Mr. Adamkus:

A trust fund to provide for the payment of the costs of closure and/or post-closure care of the landfill facility was established July 1, 1982 in the amount of $25,441.00. On December 31, 1991, the Northside Sanitary Landfill was closed. The Northside Trustees (successors to the Northside Remediation Committee) will carry out the remedy worked out in their Consent Decree with EPA. In the meantime, however, there is the matter of the post-closure care of the facility covered by the Trust Agreement referred to above, which we have itemized in Exhibit "A" attached. As you can see these items need attention at this time prior to the remedy being carried out.

As the Trust Agreement provides the Trustee, Merchants National Bank and Trust Company, formerly Farmers State Bank of Zionsville, Incorporated, shall reimburse the Grantor, Northside Sanitary Landfill, Inc., only as specified by EPA Regional Administrator in writing. We therefore request that you accept this letter as the application of the Trustee under the Trust Agreement for your approval of the post-closure expenses itemized in Exhibit "A" attached hereto.

If you have any questions, feel free to call us.

Sincerely yours,

Halbert W. Kunz

HWK/lca

Enclosure

cc: Northside Sanitary Landfill, Inc.

EXHIBIT "A"

Proposed Collection and Disposal of Leachate and Maintenance of Landfill

A. Collection and hauling.

1. Pumping and hauling from leachate collection systems at Northside Saniatry Landfill to 10,000 gal. storage tank.
   a) Labor employed in pumping and hauling. 10 hours at the the rate of $30.00 per hour. -$ 300.
   b) Use of equipment in pumping and hauling. 10 hours at the rate of $50.00 per hour. - 500.
   c) Office overhead - Secretary's time one hour at the rate of $75.00 per hour. - 75.
   d) Supervision - Greg Bankert's time. Three hours at the rate of $100.00 per hour. - 300.
2. Disposal.
   a) Hauling of 5,000 gal. per load to Cincinnati, Ohio or elsewhere for disposal. - 2,000.

SUB TOTAL $ 3,175.

Times 8 quarterly collections and disposal. $25,400.

B. Regrading North Slope of landfill. 12,000.

C. Furnishing and placing clay barrow material in the amount of 10,000 cu. yds. on North Slope. 23,786.

GRAND TOTAL $61,186.

cc: ORC
PMD✓
WMD
BECK
RA RF

CB

KUNZ AND KUNZ

LAWYERS

WILLIS K. KUNZ
HALBERT W. KUNZ
DONALD L. BECKERICH
WILLIAM A. WADDICK
THOMAS L. MATTIX
S. GREGORY ZUBEK
KATHRYN M. KUNZ
ALLISON D. WHARRY

320 N. MERIDIAN STREET
INDIANAPOLIS, INDIANA 46204

AREA CODE 317
262-1111

FAX NO. (317) 262-1132

May 19, 1992

Mr. Valdas V. Adamkus
Regional Administrator
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, Illinois 60604

RE: Trust Agreement
Northside Sanitary Landfill, Inc. and
Farmers State Bank of Zionsville,
Incorporated
Our File: N33(33)

Dear Mr. Adamkus:

A trust fund to provide for the payment of the costs of closure and/or post-closure care of the landfill facility was established July 1, 1982 in the amount of $25,441.00. On December 31, 1991, the Northside Sanitary Landfill was closed. The Northside Trustees (successors to the Northside Remediation Committee) will carry out the remedy worked out in their Consent Decree with EPA. In the meantime, however, there is the matter of the post-closure care of the facility covered by the Trust Agreement referred to above, which we have itemized in Exhibit "A" attached. As you can see these items need attention at this time prior to the remedy being carried out.

As the Trust Agreement provides the Trustee, Merchants National Bank and Trust Company, formerly Farmers State Bank of Zionsville, Incorporated, shall reimburse the Grantor, Northside Sanitary Landfill, Inc., only as specified by EPA Regional Administrator in writing. We therefore request that you accept this letter as the application of the Trustee under the Trust Agreement for your approval of the post-closure expenses itemized in Exhibit "A" attached hereto.

If you have any questions, feel free to call us.

Sincerely yours,

Halbert W. Kunz

HWK/lca

Enclosure

cc: Northside Sanitary Landfill, Inc.

EXHIBIT "A"

Proposed Collection and Disposal of Leachate and Maintenance of Landfill

A. Collection and hauling.

1. Pumping and hauling from leachate collection systems at Northside Saniatry Landfill to 10,000 gal. storage tank.
   a) Labor employed in pumping and hauling. 10 hours at the the rate of $30.00 per hour. -$ 300.

   b) Use of equipment in pumping and hauling. 10 hours at the rate of $50.00 per hour. - 500.

   c) Office overhead - Secretary's time one hour at the rate of $75.00 per hour. - 75.

   d) Supervision - Greg Bankert's time. Three hours at the rate of $100.00 per hour. - 300.

2. Disposal.

   a) Hauling of 5,000 gal. per load to Cincinnati, Ohio or elsewhere for disposal. - 2,000.

SUB TOTAL	$ 3,175.	
Times 8 quarterly collections and disposal.		$25,400.
B. Regrading North Slope of landfill.		12,000.
C. Furnishing and placing clay barrow material in the amount of 10,000 cu. yds. on North Slope.		23,786.
GRAND TOTAL		$61,186.

MERCHANTS INVESTMENT & TRUST COMPANY
MERCHANTS NATIONAL BANK
ONE MERCHANTS PLAZA P.O. BOX 5031
INDIANAPOLIS, INDIANA 46255
A MERCHANTS NATIONAL COMPANY

10-6191-00-0

MPR-JHL-EPA*R1A

TRUST UNDER AGREEMENT
NORTHSIDE SANITARY LANDFILL
IRREVOCABLE TRUST
DATED 07/01/1982 RESTATED IN 12/1983

INVESTMENT & TRANSACTION STATEMENT
06/01/91 THRU 05/31/92

IF YOU HAVE ANY QUESTIONS CONCERNING THIS STATEMENT,
PLEASE CALL OR WRITE MARTHA RHOADES (317) 267-7261

EPA REGIONAL ADMINISTRATOR
230 SOUTH DEARBORN STREET
CHICAGO, IL 60606

(920606920605 0000028203)

MERCHANTS INVESTMENT & TRUST COMPANY
MERCHANTS NATIONAL BANK
ONE MERCHANTS PLAZA P.O. BOX 5031
INDIANAPOLIS, INDIANA 46255
A MERCHANTS NATIONAL COMPANY

STATEMENT OF INVESTMENT POSITION
AS OF 05/31/92

ACCOUNT NUMBER 10-6191-00-0
T-A NORTHSIDE SANITARY LANDFILL (ZIO

SUMMARY STATEMENT

	CARRY VALUE	TOTAL MARKET	% OF TOTAL ACCOUNT AT MARKET	ESTIMATED ANNUAL INCOME	% YIELD MARKET VALUE
FIXED INCOME SECURITIES					
GOVERNMENT OBLIGATIONS					
TREASURY & FEDERAL AGENCIES	$59,911.63	$61,812.50	92.33	$4,356	7.05
CASH & EQUIVALENTS	$5,131.60	$5,131.60	7.67	$185	3.61
TOTAL ASSETS	$65,043.23	$66,944.10	100.00	$4,541	6.78

(920606920605 0000028204)

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STATEMENT OF INVESTMENT POSITION
AS OF 05/31/92

ACCOUNT NUMBER 10-6191-00-0
T-A NORTHSIDE SANITARY LANDFILL (ZIO

VALUATION STATEMENT

FACE AMOUNT/ NO. SHARES	DESCRIPTION	% OF *ASSET CATEGORY* AT MARKET	CARRY VALUE /UNIT	TOTAL MARKET /UNIT	ESTIMATED ANNUAL INCOME/RATE	% YIELD MARKET VALUE
	* FIXED INCOME SECURITIES *					
	GOVERNMENT OBLIGATIONS					
	TREASURY & FEDERAL AGENCIES					
25,000	UNITED STATES TREASURY NOTES 7.625% DATED 05/31/1991 DUE 05/31/1996	42.32	$24,933.50 99.73	$26,156.25 104.63	$1,906 .07625	7.29
35,000	UNITED STATES TREASURY NOTES 7% DATED 01/31/1991 DUE 01/31/1993	57.68	34,978.13 99.94	35,656.25 101.88	2,450 .07	6.87
	TOTAL TREASURY & FEDERAL AGENCIES	100.00	$59,911.63	$61,812.50	$4,356	7.05
	TOTAL GOVERNMENT OBLIGATIONS	100.00	$59,911.63	$61,812.50	$4,356	7.05
	* TOTAL FIXED INCOME SECURITIES *	100.00	$59,911.63	$61,812.50	$4,356	7.05
	* CASH AND EQUIVALENTS *					
5,131.60	DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	100.00	$5,131.60	$5,131.60	$185 .03610	3.61
	INCOME CASH	58.35	2,994.21	2,994.21		

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STATEMENT OF INVESTMENT POSITION
AS OF 05/31/92

ACCOUNT NUMBER 10-6191-00-0
T-A NORTHSIDE SANITARY LANDFILL (ZIO

VALUATION STATEMENT

FACE AMOUNT/ NO. SHARES	DESCRIPTION	% OF *ASSET CATEGORY* AT MARKET	CARRY VALUE /UNIT	TOTAL MARKET /UNIT	ESTIMATED ANNUAL INCOME/RATE	% YIELD MARKET VALUE
	PRINCIPAL CASH	58.35-	2,994.21-	2,994.21-		
	* TOTAL CASH AND EQUIVALENTS *	100.00	$5,131.60	$5,131.60	$185	3.61
	** TOTAL ASSETS **		$65,043.23	$66,944.10	$4,541	6.78

MERCHANTS INVESTMENT & TRUST COMPANY
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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
05/31/91	BALANCE LAST STATEMENT	328.39-	328.39	62,264.63
06/05/91	INT TO 05/31/91 A I M PRIME PORTFOLIO SHORT TERM INVESTMENT COMPANY	139.35		
	PURCHASED 139.000 UNITS@ 1.00 A I M PRIME PORTFOLIO		139.00-	139.00
06/12/91	SOLD A I M PRIME PORTFOLIO SHORT TERM INVESTMENT COMPANY		2,492.00	2,492.00-
	PURCHASED DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		2,492.00-	2,492.00
06/13/91	SOLD 125.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		125.00	125.00-
	INTERNAL REVENUE SERVICE FEDERAL FIDUCIARY ESTIMATES DUE 6/17/91		125.00-	
06/24/91	SOLD 23.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		23.00	23.00-
	MONTHLY FEE	22.50-		

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
06/28/91	PURCHASED .850 UNITS@ 1.00 DREYFUS TREASURY PRIME		.85-	.85
07/03/91	ENTRY REVERSED ON 07/11/91 INT TO 06/30/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	6.53		
	PURCHASED 6.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		6.00-	6.00
	FEE OF .35 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
07/05/91	INT TO 06/30/91 A I M PRIME PORTFOLIO SHORT TERM INVESTMENT COMPANY	12.39		
	PURCHASED 12.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		12.00-	12.00
07/11/91	TO REVERSE ENTRY OF 07/03/91 INT TO 06/30/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	6.53-		

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
07/11/91	TO CORRECT ENTRY OF 07/03/91 INT TO 06/30/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	6.92		
	PURCHASED 1.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		1.00-	1.00
07/12/91	SOLD 59.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		59.00	59.00-
	INTERNAL REVENUE SERVICE INTEREST DUE ON FORM 1041, TAX PERIOD DEC 31,1989 NORTHSIDE SANITARY LANDFILL INC TR TIN 35-6411663 PER IRS NOTICE	58.81-		
07/23/91	SOLD 22.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		22.00	22.00-
	MONTHLY FEE	22.50-		
07/31/91	INT TO 07/31/91 ON 35000. UNITED STATES TREASURY NOTES 7% DATED 01/31/1991 DUE 01/31/1993	1,225.00		
	PURCHASED 1225.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		1,225.00-	1,225.00

MERCHANTS INVESTMENT & TRUST COMPANY
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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
08/02/91	INT TO 07/31/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	10.93		
	PURCHASED 10.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		10.00-	10.00
	FEE OF .60 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
08/23/91	SOLD 22.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		22.00	22.00-
	MONTHLY FEE	22.50-		
08/30/91	PURCHASED .430 UNITS@ 1.00 DREYFUS TREASURY PRIME		.43-	.43
09/04/91	INT TO 08/31/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	16.17		
	PURCHASED 16.170 UNITS@ 1.00 DREYFUS TREASURY PRIME		16.17-	16.17

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
09/04/91	FEE OF .91 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
09/12/91	SOLD 125.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		125.00	125.00-
	INTERNAL REVENUE SERVICE FEDERAL FIDUCIARY ESTIMATED INCOME TAX DUE 1990		125.00-	
09/23/91	SOLD 22.500 UNITS@ 1.00 DREYFUS TREASURY PRIME		22.50	22.50-
	MONTHLY FEE	22.50-		
10/03/91	INT TO 09/30/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	15.00		
	PURCHASED 15.000 UNITS@ 1.00 DREYFUS TREASURY PRIME		15.00-	15.00
	FEE OF .86 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
10/23/91	SOLD 22.500 UNITS@ 1.00 DREYFUS TREASURY PRIME		22.50	22.50-
	MONTHLY FEE	22.50-		
11/04/91	INT TO 10/31/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	14.73		
	PURCHASED 14.730 UNITS@ 1.00 DREYFUS TREASURY PRIME		14.73-	14.73
	FEE OF .87 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
11/25/91	SOLD 22.500 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		22.50	22.50-
	TRUST DIVISION FEE	22.50-		
11/29/91	INT TO 11/30/91 ON 25,000. UNITED STATES TREASURY NOTES 7.625% DATED 05/31/1991 DUE 05/31/1996	953.12		
	PURCHASED 953.120 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		953.12-	953.12

MERCHANTS INVESTMENT & TRUST COMPANY
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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
12/04/91	INT TO 11/30/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	13.49		
	PURCHASED 13.490 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		13.49-	13.49
	FEE OF .84 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
12/23/91	SOLD 22.500 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		22.50	22.50-
	TRUST DIVISION FEE	22.50-		
01/06/92	INT TO 12/31/91 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	16.32		
	PURCHASED 16.320 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		16.32-	16.32

MERCHANTS INVESTMENT & TRUST COMPANY
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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
03/04/92	FEE OF 1.28 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
03/23/92	SOLD 35.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		35.00	35.00-
	TRUST DIVISION FEE	35.00-		
04/06/92	INT TO 03/31/92 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	17.26		
	PURCHASED 17.260 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		17.26-	17.26
	FEE OF 1.38 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
04/13/92	SOLD 15.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		15.00	15.00-

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
04/13/92	BALANCE DUE STATE FIDUCIARY TAXES FOR TAX YEAR ENDING 12/31/91 INDIANA DEPARTMENT OF REVENUE I.D. NO. 35-6411663		15.00-	
04/14/92	SOLD 154.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		154.00	154.00-
	PAYMENT OF ESTIMATED FIDUCIARY TAXES FOR TAX YEAR ENDING 12/31/92 INTERNAL REVENUE SERVICE I.D. NO. 35-6411663		154.00-	
04/23/92	SOLD 35.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		35.00	35.00-
	TRUST DIVISION FEE	35.00-		
05/06/92	INT TO 04/30/92 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	16.38		
	PURCHASED 16.380 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		16.38-	16.38

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
05/06/92	FEE OF 1.31 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
05/26/92	SOLD 35.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		35.00	35.00-
	TRUST DIVISION FEE	35.00-		
	** BALANCES **	2,994.21	2,994.21-	65,043.23

STATEMENT SUMMARY

BEGINNING BALANCES	328.39-	328.39	62,264.63
TOTAL RECEIPTS	3,720.44	3,427.00	6,205.60
TOTAL DISBURSEMENTS	397.84-	6,749.60-	3,427.00-
ENDING BALANCE	2,994.21	2,994.21-	65,043.23

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MERCHANTS INVESTMENT & TRUST COMPANY
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A MERCHANTS NATIONAL COMPANY

STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
02/04/92	INT TO 01/31/92 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	15.25		
	PURCHASED 15.250 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		15.25-	15.25
	FEE OF 1.09 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
02/24/92	SOLD 35.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		35.00	35.00-
	TRUST DIVISION FEE	35.00-		
03/04/92	INT TO 02/29/92 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND	16.60		
	PURCHASED 16.600 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		16.60-	16.60

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STATEMENT OF ACCOUNT

DATE 05/31/92

ACCOUNT NUMBER: 10-6191-00-0 ACCOUNT NAME: T-A NORTHSIDE SANITARY LANDFILL (ZIO ADMINISTRATIVE OFFICER: MPR

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	ASSET CARRYING VALUE
01/06/92	FEE OF 1.11 FOR TEMPORARY CASH MANAGEMENT DREYFUS TREASURY PRIME CASH MANAGEMENT FUND			
01/14/92	SOLD 125.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		125.00	125.00-
	PAYMENT OF ESTIMATED FIDUCIARY TAXES FOR TAX YEAR ENDING 12/31/91 INTERNAL REVENUE SERVICE I.D. NO. 35-6411663		125.00-	
01/23/92	SOLD 35.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		35.00	35.00-
	TRUST DIVISION FEE	35.00-		
01/31/92	INT TO 01/31/92 ON 35,000. UNITED STATES TREASURY NOTES 7% DATED 01/31/1991 DUE 01/31/1993	1,225.00		
	PURCHASED 1225.000 UNITS @ 1.00000 DREYFUS TREASURY PRIME CASH MANAGEMENT FUND		1,225.00-	1,225.00